PRODUCTION FIGURES RELEASED BY N.E.M.A.

By F. M. Cockrell

THE figures in the adjoining columns, just released by the statistical department of the National Electrical Manufacturers Association (NEMA), 420 Lexington Ave., New York, are the first refrigeration statistics ever issued by this organization. The totals are based upon reports furnished by 10 manufacturing companies which are members of the Refrigeration Division of this association. The member companies are:

Climax Electrical Refrigeration Co.
Copeland Products, Inc.
Frigidaire Corp.
General Electric Co.
Kelvinator Corp.
Norge Corp.
Servel, Inc.
Tennessee Furniture Corp.
Universal Cooler Corp.
Westinghouse Electric & Mfg. Co.

Since the above list includes all of the companies which have been known as large producers over a period of several years, the total shipments of the group are fairly close to the totals for the entire industry. Comparison with figures published in the January 14 issue of ELECTRIC REFRIGERATION NEWS indicates that the NEWS estimate of total industry sales for all time was conservative. The figures published by the NEWS were based upon reports furnished by 20 companies, including the NEMA membership, and allowance was made for the output of additional companies which are no longer in business. These allowances, however, were not more than three per cent of the total.

Comparison of the detailed figures above with those published in the NEWS January 14 is difficult owing to differences in the basis of classification. The NEWS questionnaire called for sales by years divided into two main classifications—household and commercial. The fiures showed 2,671,000 household systems and 784,000 commercial systems, or a total of 3,455,000 combined household and commercial systems sold up to January 1, 1931. The number of compressors was taken as the basis for estimating the total number of electric refrigeration systems, the figures including complete self-contained units and compressors for remote and multiple installations.

Referring to the NEMA figures above, household and commercial types are not separated, although it is safe to assume practically all of the self-contained systems (group 1) of less than 500 lbs. capacity are household. The total of the four sizes of cabinets amounts to 2,516,931. This is only 154,069 less than the total number of household systems estimated by the NEWS (and the NEWS figures included compressors for multiple installations).

Multiple Systems Not Separated

Neither the NEWS nor the NEMA figures indicate clearly how many compressors have been installed as a part of multiple systems or how many cooling units are served by these compressors. In the NEWS questionnaire the manufacturers were requested to make an estimate of the total number of families in the United States now using electric refrigeration and the reports indicated a total of 3,000,000, making a saturation of 14.7 per cent of the 20,438,774 wired homes in the United States. It should be noted, however, that the 3,000,000 total does not include exports and furthermore this estimate involves a consideration of obsolescence and replacements.

Looking at the NEMA figures, we cannot tell how many of the compressors in groups 5 and 6 represent multiple installations for household service, and how many represent commercial applications. Adding the refrigerating systems with machine and cooling coils, without cabinets (group 5) and the compression units only (group 6), we have 408,395 of less than 500 lbs. and 13,842 from 500 lbs. to less than 2,000 lbs. or a total of 422,237 compressors less than one-ton capacity for all remote installations, both household and commercial. If we assume that the 646,072 cooling units (group 7) are all for multiple installations, it would still be necessary to estimate the average number of cooling units per compressor for this type of job if we were to attempt to figure the total multiple business.

2,888,499 Self-Contained Units

By combining the figures in the first and second columns we get a total of 2,526,098 complete refrigeration systems (self-contained or remote when cabinet is included, but not including water coolers, ice cream or dairy units) (group 1). Adding in 91,443 self-contained water cooling units (group 2), 270,123 self-contained ice cream units (group 3) and 835 self-contained dairy units (group 4), we get a total of 2,888,499 self-contained units of both household and commercial types.

Adding 105,245 refrigerating systems with machine and cooling coils, without cabinets, less than one-ton capacity (group 5), the total number of compressors is brought up to 2,993,744. Adding the 316,992 compression units only, with or without motor, less than one-ton capacity (group 6), we have a grand total of 3,310,736 compressors, less than one-ton capacity, shipped for all time by the 10 companies listed. This compares with the 3,455,000 total estimated by ELECTRIC REFRIGERATION NEWS. This leaves only 144,264 for the output of all other companies.

As previously mentioned, it appears that the NEWS estimate for the entire industry is low since this difference of 144,264 must cover a number of important companies now active in the field, as well as several companies which produced a few thousand machines each before going out of business. It is possible that the totals furnished by the 10 companies exceed the totals furnished by the same companies to the NEWS. In the case of some companies, the records for early years are inadequate. Also the NEWS figures for 1930 were gathered immediately after the end of the year and some of the manufacturers figures represented estimates, particularly for the last quarter of 1930.

Total of Refrigeration Units Shipped by N. E. M. A. Member Companies For All Time to January 1st, 1931

		Less than 500 Lbs.	From 500 less than 2000 Lbs.	From 1 ton to less than 10 tons
(1) Self-contained (or remote when cabinet is included) Refrigerating Systems with machine, cooling coils and cabinet (not including water-cooling, ice cream or dairy units)	5 cu. ft. and less	1,323,394	4,100	...
	5 to 6 cu. ft.	749,882	2,600	...
	6 to 10 cu. ft.	369,222	1,157	...
	over 10 cu. ft.	74,433	1,310	...
(2) Self-contained Water-Cooling units with machine, with cooling coils and cabinets complete		91,443	...	...
(3) Self-contained Ice Cream units with machine, cooling coils and cabinet complete		268,395	1,728	...
(4) Self-contained Dairy Units with machine, cooling coils and cabinet complete		785	50	...
(5) Refrigerating Systems with machine and cooling coils, *without cabinets* (not self-contained) (not included in 1, 2, 3 or 4 above)		97,863	7,382	296
(6) Compression units only, with or without motor		310,532	6,460	588
(7) Cooling units (low sides) only (not included in 1, 2, 3, 4 or 5 above)		646,072	...	...

H. B. MATZEN IS ELECTED CARRIER VICE PRESIDENT

NEWARK, N. J.—Carrier Engineering Corp. has recently elected H. B. Matzen vice president. He will continue in charge of the Cleveland offices as district sales manager.

Our New
CATALOG
No. 4, Covering
Refrigeration Supplies
Now available for Service Organizations west of the Mississippi and on Pacific Coast
WRITE FOR YOUR COPY
Refrigeration Service Inc.
3109 Beverly Blvd. Los Angeles, Calif.

HIGH PRESSURE UNITS

THERE has been some question as to where the high pressure condensing units should be used. Generally speaking high suction pressure condensing units should be used for applications requiring long operating periods of the condensing unit over 1 lb. per sq. in suction pressure. Specifically they should be used for submersion dairy coolers and direct water coolers, when the suction pressure is over 1 lb., and also for most florist refrigerators.

Kelvinator Service News.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Mechana-Kold

The line of evaporating units offered by the Mechana-Kold Corp. of Babylon, Long Island, N. Y., is shown in a folder now available to the trade from that company. Seven freezing units are listed by this company, all employing the direct expansion system of evaporation.

Rawlplug Screw Anchors

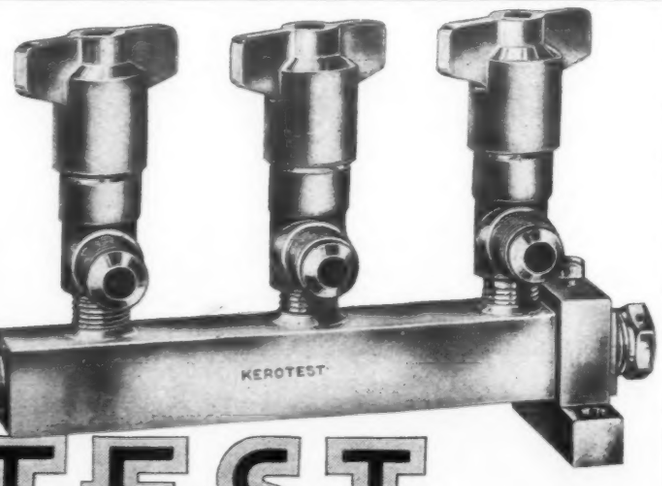
Detailed directions for using the fibre screw anchors furnished by the Rawlplug Co., of New York City, are given in bulletin 201 of that organization. Rawlplugs are jute fibre sleeves made to slip into a hole in any hard material, so that wood screws or lag screws can be fastened in them securely.

Wagner Fans

The addition of several new fans to the line of electric fans produced by the Wagner Electric Corp., of St. Louis, are announced in the new Wagner Bulletin 168. The new models are 8 and 10 in. non-oscillating fans, a one-speed 10 in. oscillating fan, and new 35 and 52 in. ceiling fans.

Oil-O-Matic Burners

Fundamental heating principles of oil burners, together with specifications and capacities of the Williams Oil-O-Matic equipment, are presented in a new 36-page illustrated file-size booklet "New Facts on Oil Heating," of the Williams Oil-O-Matic Heating Corp. of Bloomington, Ill. The pamphlet is prepared especially for architects and engineers who are contemplating the installation of oil burning heating equipment in homes, apartment houses, and business and public buildings. The regulations of the National Board of Fire Underwriters are included in the back of the book.

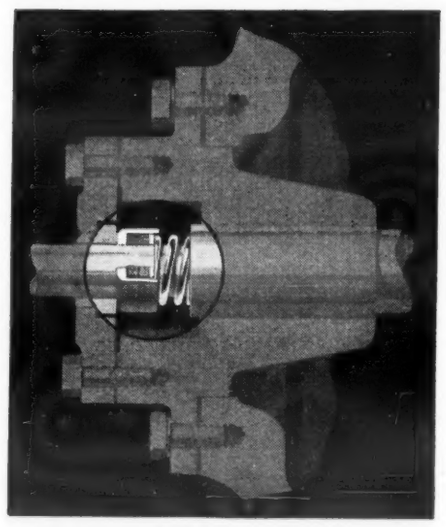


KEROTEST
forged brass MANIFOLDS

UNIVERSALLY approved by service men for the installation of apartment house refrigeration systems . . . the result of our close cooperation with the men in the field, their problems and their particular requirements. With this manifold, ample clearance is allowed for attaching either flare nuts, turn wing nut seal caps or handwheels. Write for complete KEROTEST Catalog.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PENNA.

Makers and Dealers Unite in Praising this Device . . .



Over 40 famous refrigerator manufacturers have standardized on Cooke Seal Rings. Its price is little. Yet it absolutely prevents leakage of refrigerant, saves wear on shaft, reduces motor load and does away with the chief source of expensive replacements and "kick-backs."

Dealers called on to repair "leakers" not Cooke equipped can permanently fix them up with Cooke Seal Rings, right on the job, with minimum time and effort. The Cooke Ring prevents shaft leakage, cuts friction and motor load, costs less than other seals and will last indefinitely.

Dealers! Makers! You will save money by using this coupon now.

COOKE Seal Ring

20 N. GREEN ST., CHICAGO, ILLINOIS, DEPT. L.

Cooke Seal Ring,
20 N. Green Street, Chicago, Dept. L.
Please tell me more about Cooke Seal Rings.
( ) For replacement units. ( ) For standard equipment
Name .....
Address .....
City..... State.....

In Three Parts

Part One

Merchandising Section

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
VOL. 5, No. 19, Serial No. 121

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DETROIT, MICHIGAN, MAY 20, 1931

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FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

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N.E.L.A. CAMPAIGN TO BUILD LOAD GAINS MOMENTUM

Dealers, Distributors In 8,000 Cities Swing Into Action

NEW YORK CITY—As the coming of Spring ushers in the year's best opportunity for electric refrigeration sales, the N. E. L. A. Electric Refrigeration Bureau is rallying all the strength of its increasingly widespread organization to point towards the Spring Jubilee goal of three-fifths of the 1931 quota of 1,000,000 sales, according to Bureau officials

Already more than 8,000 cities and towns are lined up behind this cooperative endeavor, and the volume of orders for promotional materials from every state in the Union and Canada has been officials say, increasingly large.

To aid the progress towards the 1931 domestic sales quota of 1,000,000 electric refrigerators, a cooperative organization has been evolved.

At the head stand the National Bureau and the 12 regional directors. Under the supervision of this general staff, state and province directors encourage and aid the formation of local bureaus.

Hundreds of these local organizations have been and are being set up throughout this country and Canada, bringing together in each instance central stations, distributors, and dealers.

Funds for a magazine advertising campaign have been contributed by leading manufacturers, and local bureaus are backing this program with newspaper, radio, billboard, display and direct mail advertising, while numerous electric refrigeration exhibits are adding to the general program of getting public attention.

J. A. Harlan, vice president in charge of sales of the Frigidaire Corp., in writing of the 20 per cent increase scored by last month's Frigidaire sales over the sales during April, 1930, and the 43 per cent increase in factory production this month, says:

"Territories showing the most improvement were almost without exception those in which the Electric Refrig-

(*Continued on Page 4, Column 5*)

ICELECT CORP. DEVELOPS NEW HERMETIC MACHINE

OMAHA — Designed and developed originally to answer the demand of buyers who wish to put out an electric refrigerator under their own name, a hermetically sealed refrigeration machine is now being marketed by the IcElect Corp. of this city.

Weighing 70 pounds, the new IcElect unit features compact construction. A by-pass unloading device, which permits the machine to start up regardless of room temperatures or head pressures, is another feature of the machine. It can be furnished without a cabinet.

Plans for extension of facilities to take care of national distribution of this new unit are being held in temporary abeyance by executives of the IcElect Corp. until possibilities for obtaining additional capital are investigated.

GRIGSBY-GRUNOW APRIL SALES TOTAL $2,409,791

CHICAGO — Sales for April of the Grigsby-Grunow Co., manufacturers of Majestic radios and refrigerators, amounted to $2,409,791.51, according to Don M. Compton, vice president and general manager.

WESTINGHOUSE PRODUCTION CALLS FOR LARGER PAYROLL

EAST SPRINGFIELD, Mass. — The Westinghouse plant here has added 1,000 employes since Jan. 1, due to increased production of electric refrigerating units, officials declare.

The East Springfield plant was recently visited by the company's officials, namely: A. W. Robinson, chairman of the board of directors; F. A. Merrick, president; J. S. Tritle, vice president, and W. S. Rugg, vice president in charge of engineering.

Owens Will Discuss Trade Relations At Convention

NEW YORK CITY—Improvement of the relations between the electric light and power companies and the independent merchandisers of electrical appliances will be the theme of J. F. Owens, first vice president of the National Electric Light Association, at the second general session of the annual convention in Atlantic City, June 8 to 12.

As president-elect of the association, Mr. Owens will deliver the keynote address under the broad title of "Trade Relations."

At the conclusion of his address Mr. Owens will introduce members of the Electrical Merchandising Joint Committee, composed of representatives of the National Retail Dry Goods Association and the National Electric Light Association, a committee organized to consider the problem of merchandising household electrical appliances "with a view to wider and more efficient distribution with the public's best interest in mind."

Following on the heels of recent country-wide agitation against appliance merchandising by utilitiy companies, Mr Owens' address will be presented as the answer of the public utilities to their opponents.

Coming as he does from Oklahoma

(*Continued on Page 4, Column 1*)

ILLINOIS LEGISLATORS STUDY UTILITY BILL

SPRINGFIELD, Ill., May 20.—(Special wire to ELECTRIC REFRIGERATION NEWS)—An Illinois legislative subcommittee hearing on Representative Roy Barnes' house bill which would prohibit utilities from engaging in merchandising will be held at 7 o'clock tonight in the assembly room of the capitol building here, according to Representative Carl J. Jobst, chairman of the subcommittee.

A meeting of this subcommittee was held May 13, and the testimony of persons who were favorable to the bill was heard. Opponents of the bill will present arguments in rebuttal at the meeting tonight.

The house subcommittee, besides Jobst, is composed of Representatives Lyons, McGrath, Fahy, Roe, Libonatti and Gormley.

After the subcommittee has made its report, the bill will be sent back to the main committee, which will decide whether to kill the bill or send it to the house for action.

MAY SHIPMENTS OF NORGE CORP. SET NEW MARK

Philadelphia Distributor Places Order For 2,500 Models

DETROIT—Shipments for the Norge Corp. for the first 15 days in May were 34.6 per cent greater than the corresponding period last month and 216.5 per cent greater than May, 1930. From January 1 up to and including May 15 Norge shipments show an increase of 528 per cent as compared with the same period in 1930, according to vice president J. H. Knapp.

Among the orders received this month was one for 2,500 units from David N. Trilling, Trilling-Montague Co., distributor in Philadelphia.

Last week Norge district sales managers met here to discuss sales plans. They were: R. E. Densmore, western sales manager, Chicago; J. E. Oliphant, central sales manager, Marion, Ohio; T. P. Halleck, southern sales manager, Jacksonville, Fla.; R. L. Wallace, eastern sales manager, Philadelphia; E. E. McMullen, distributor, St. Louis, and D. M. Trilling, distributor, Philadelphia.

John T. Morgan of the Charleston Electrical Supply Co., Charleston, W. Va., made a tour of the Norge factory here May 13. J. N. Ewing of the Ludwig Hommel Co., Pittsburgh, visited the factory the following day.

No Ford Yet

DETROIT — No affirmation of the recent rumors that the Ford Motor Co. is about to enter the electric refrigeration field could be obtained from an official of the company who was questioned on the subject by a News representative.

Unwilling to be directly quoted, this official referred to the general practice of the Ford Co. neither to affirm, nor deny various rumors which get into circulation concerning its activities. The refrigeration rumor has cropped up periodically for a number of years.

Mayflower Orders Tax Capacity Of Plant

DAYTON, Ohio—More orders for Mayflower refrigerators were booked during the first four months and the first 10 days of May, 1931, than were received during the entire year of 1930, announces L. G. Lindsay, vice president of the Trupar Mfg. Co. A sales increase of 347 per cent over April, 1930, was recorded last month, Mr. Lindsay states.

"We are doing everything possible to increase production, although we could run our plant at full capacity through July on the business we now have booked," declares Mr. Lindsay.

A conference of Mayflower distributors, on the national advertising program, which will get under way in a few weeks, was held in Dayton, May 14.

The following distributors attended the conference: Charles R. Kieruiff and R. F. Ravenscroft, Los Angeles; W. A Shuler and D. B. Mouledous of Shuler Supply Co., New Orleans; E. W. Eskuchi of Western Distributors, Inc., Salt Lake City; R. S. Mauger of the Philadelphia Victor Distributing Co., Philadelphia; and A. K. Dearing of Beck and Gregg Co., Atlanta.

The Philadelphia Victor Distribution Co. is the newest distributor for the Mayflower line, Mr. Lindsay reports.

NEW METER PLAN OF PAYMENT ANNOUNCED

LOS ANGELES (UTPS)—The Platt Music Co., 832 South Broadway, is selling refrigerators on a meter plan of payment, allowing purchasers to pay for refrigerators at the rate of 25 cents a day, according to W. L. Kirkpatrick, manager of the refrigeration department.

Each 25-cent payment every 24 hours, explains Kirkpatrick, is not considered as a rental, but as a daily deposit in the meter device, known as "Meter-Ice" and built for the Meter-Ice Corp. of Los Angeles and Detroit, by the General Electric meter division at Fort Wayne, Ind.

The deposit applies against the full purchase price of a refrigerator. When sufficient quarters have been fed into the device to cover the sale price of the box the refrigerator then is owned outright by the purchaser. The plan has been in operation here several weeks.

This music company now handles Copeland, Majestic and Servel lines, having been named dealer representative for the latter a short time ago.

Judson C. Burns' Board of Strategy

Executives of Judson C. Burns, Philadelphia General Electric distributor, holding session in the conference room. Pictured above are: (left to right)—C. M. Randel, general manager; F. D. W. Clark, treasurer; Joseph Rafferty, wholesale manager; Carl Morash, commercial manager; R. P. Burns, vice president; Judson C. Burns, president; William Geiger, assistant general manager; John Convery, retail sales manager; R. A. Sholl, sales promotion and advertising manager; Maurice Webb, assistant to sales promotion manager; Howard Blinsinger, new apartment house division.

FRIGIDAIRE APRIL BUSINESS SHOWS RECORD INCREASE

Production Schedule For June Is Boosted 33 Per Cent

DAYTON, Ohio — Frigidaire orders booked for April were nearly double those of the three preceding months combined, and the factories are running on a 60-hour a week basis to keep pace with field requirements, according to E. G. Biechler, president and general manager.

The June manufacturing schedule for Frigidaire household models has been increased 33 per cent. This represents also a 33 per cent increase over the schedule for June, 1930.

Retail sales of the household division for April were 77 per cent higher than in March, and total shipments for the month were 23 per cent above April, 1930, he stated. May production has been running 43 per cent higher than that of the same month last year.

According to Mr. Biechler, the supply of finished products in Dayton for a number of weeks has been only sufficient to meet the day-by-day requirements of the shipping department.

The production situation has thus far been met by operating departments extra hours. Many of these departments, formerly running 50 hours a week, are now on a 60 hours a week basis.

Territories showing marked increases in April included Chicago, Davenport, and Sioux City, where new all-time records were established. Other districts reporting great improvement were New York, New England, Pennsylvania and Florida.

The Dayton retail store had sold its entire 1931 quota on May 13. A contributing factor to this early attainment of a heavy quota was a special cam-

ROMIG JOINS ADVERTISING STAFF OF LEONARD CO.

DETROIT—A. M. Taylor, director of advertising and sales promotion for the Leonard Refrigerator Co. announces the appointment of Max H. Romig as assistant advertising manager.

Mr. Romig will work in Detroit office under Mr. Jaeger and as assistant to Mr. Taylor.

Romig's first work was with Gordon Van Tine Co. of Davenport, Ia., building materials suppliers.

Later he joined Barnard & Seas, machinery manufacturers of Moline, Ill., with which concern he was advertising manager from 1919 to 1925. From 1926 to 1929, he was advertising manager of the Velie Motors Corp., Moline, Ill.

He was advertising manager of the Free Sewing Machine Co., Rockford, Ill., at the time he was appointed to his new position with Leonard Refrigerator Co.

ELECTROLUX SALES MOVE AHEAD IN NEW YORK CITY

NEW YORK CITY—Sales of Electrolux gas refrigerators in New York increased 50 per cent during the first months of 1931, according to Oscar H. Fogg, vice president of the Consolidated Gas Co. of New York.

Orders for 7,672 gas refrigerators were received during January, February, and March in the territory served by the Consolidated company and its affiliated gas companies, as compared with 5,107 for the same period last year.

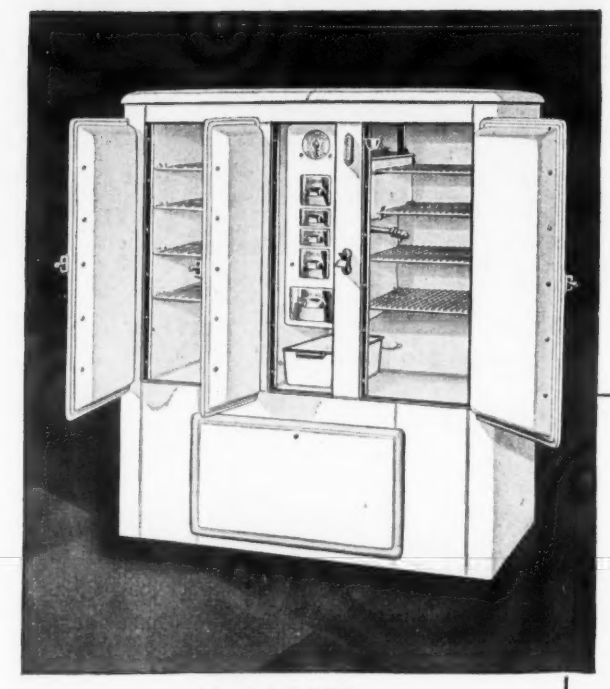
During the first three months of 1931, 5,536 gas refrigerators were delivered and installed for customers. This is an increase of 205 per cent over 1930.

CHARLOTTE UTILITY DOUBLE QUOTA IN CAMPAIGN

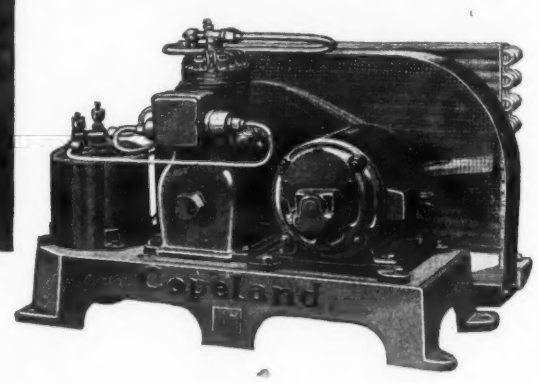
CHARLOTTE, N. C.—During the 30-day spring selling campaign of the Southern Public Utilities Co., 1,476 Kelvinators were sold by the 38 offices of the company.

This represents an increase of 242 per cent over the spring campaign in 1930, when 609 Kelvinators were sold.

40 SALES
FROM ONE SHOW



Model E-152



Commercial Model XA-1200 B

COPELAND'S
READING, PENNSYLVANIA, DISTRIBUTOR PROVES QUICK SALABILITY OF COPELAND REFRIGERATION

Recently, Copeland's Reading, Pa., distributor—the B. O. R. Radio Co., Inc.,—exhibited at the annual local Contractors' and Builders' Show. As a direct result of this show 40 bona fide sales came rolling in—39 domestic cabinets and one $1500 commercial job. Convincing and dramatic proof of the quick salability of Copeland refrigeration!

The success of the B. O. R. Radio Co., Inc., may be regarded as typical of the experiences of hundreds of other Copeland dealers and distributors. That the 1931 Copeland commercial and domestic lines have extraordinary sales appeal is being demonstrated daily all over the country! Little wonder that this should be true—for the 1931 Copelands embody the most modern and advanced features found in any ice machine today!

Why not handle electric refrigeration that practically "sells itself"? Copeland offers you an opportunity—cash-in on it! Write or wire today for sales franchise details and complete information.

COPELAND SALES COMPANY
332 CASS AVENUE, MOUNT CLEMENS, MICHIGAN

COPELAND
FOR THOSE WHO WANT THE FINEST

April Business Sets New Rex Cole Mark

NEW YORK CITY—Showing the 48th consecutive sales gain and one of the largest single monthly increases in the history of the corporation, April purchases of the General Electric refrigerator in Greater New York and seven suburban counties topped the same period of 1930 by 82 per cent, it was announced May 11 by Rex Cole, Inc., at 265 Fourth Ave.

Increased newspaper advertising, wider use of the installment purchase plan and a growing appreciation on the part of the public of electric refrigeration were seen by Cole as greatly influencing the increases, it was said.

Rex Cole, Inc. expects to double its business this year, increasing sales well past the $18,000,000 mark.

"While April was one of the biggest months in our history, we expect May to be still greater. This expectation is due to the fact that dealers and utility companies will stage concerted sales campaigns, as a part of the plan of the National Electric Light Association to sell 1,000,000 electric refrigerators this year," states Cole.

NORGE PACIFIC SALES BREAK PREVIOUS RECORDS

LOS ANGELES—Improvement in domestic and apartment house installations during the last five months is reported by Joseph Herbstrom, southern California manager for the Norge Pacific Co. Sales, according to Herbstrom, are 400 per cent over previous records for this period.

During the last few months the dealer list in southern California, western Nevada and parts of Arizona, has been increased to 125 companies, which include hardware and furniture stores, music, electrical, radio and auto supply dealers, and in several instances, from the plumbing trade.

Norge refrigerators were recently installed in the 81 apartments of the Marlin-Rex at 938 S. Lake St., Los Angeles.

BROOKLYN GAS CO. REPORTS INCREASED ELECTROLUX SALES

BROOKLYN—Delivered retail appliance sales of the Brooklyn Union Gas Co. for the first three months of this year show a considerable increase over the sales for the corresponding period last year, according to George F. B. Owens, domestic sales manager of the New Business Department.

Delivered sales for the first quarter of 1931 are 59 per cent more than those for the first three months of 1930.

Sales of Electrolux by the Brooklyn company for the first three months of 1931 over the corresponding period of 1930, the best refrigeration sales year, show an increase of 73 per cent.

PIERCE-PHELPS STAFF GOLFS, PLAYS BASEBALL

PHILADELPHIA—The entire executive and sales staff of Peirce-Phelps, Inc., Majestic distributor, took time off on May 4 to spend a day frolicking at the Bankers Country Club in Ambler, Pa.

The morning was taken up with golf and at 1 o'clock when luncheon was served, many hot scores were turned in. The afternoon was taken up with various contests, followed by a baseball game, and dinner at 7:00 p. m.

After dinner, talks were made by W. G. Peirce, Jr., president; J. Trevor Peirce, vice president; C. M. Phelps, secretary-treasurer; Paul C. Richardson, radio sales manager, and W. P. Davis, refrigerator sales manager.

Following these talks a surprise celebration was held for W. G. Peirce, Jr., whose birthday was on May 5. Each man in the sales organization presented him with a gift reminiscent of his childhood days.

ATLANTA DISTRIBUTOR GETS ALABAMA TERRITORY

BIRMINGHAM, Ala.—The Capital Electric Co. of Atlanta, will handle distribution of Majestic refrigerators in north Alabama in addition to radios. The territory includes all of north Alabama north from Tuscaloosa.

A warehouse will be maintained at Birmingham, with Arthur Calais in charge.

ALBANY CONCERN GETS SERVEL AGENCY FOR 20 COUNTIES

EVANSVILLE, Ind.—Albany Motor Specialty Corp., Albany, N. Y., has been appointed distributor for the Servel Hermetic electric refrigerator, according to announcement by Servel Sales, Inc.

This concern will cover 20 counties in the state of New York, formerly handled by the Ignition Service and Supply Co., Albany.

CAMPAIGN STARTED BY ST. LOUIS BUREAU

ST. LOUIS—A city-wide demonstration of electric refrigeration for the home is being held in St. Louis May 16 to June 1.

Plans for the electric refrigerator "Spring Jubilee" were formulated at a meeting of the Electric Refrigeration Bureau of St. Louis, held recently at the Hotel Jefferson.

During the two-week period public receptions are being conducted in the display rooms of electric refrigerator dealers and distributors in St. Louis. At the headquarters of the Union Electric Light and Power Co., 12th and Locust Sts., the "Spring Jubilee" exhibition is featuring all makes of household electric refrigerators represented in St. Louis by the cooperating distributors and dealers.

During the campaign the Bureau is conducting a special newspaper advertising campaign to carry to the public the story of the Jubilee and to promote the advantages of electric refrigeration in the home.

The makes of refrigerators represented are: Copeland, Frigidaire, General Electric, Ice-O-Matic, Kelvinator, Majestic, Mayflower, Servel, Westinghouse and Zerozone.

The executive committee directing the Jubilee is headed by Charles E. Michel, sales manager of the Union Electric Light and Power Co., as chairman of the local committee; A. C. Brandt, president of the Brandt Electric Co.; J. C. Chambers, sales manager of the Del-Home Light Co.; L. D. James, president of James & Co., and R. C. Houck, manager of the Kelvinator Sales Corp.

These men with H. D. Bibb, sales manager, Koerber-Brenner Co.; E. G. Blumeyer, sales manager, Fuchs Appliance Co.; M. L. Daugherty, sales manager, Kelvinator Sales Corp.; Charles L. Fink, manager, Arthur R. Lindburg, Inc.; A. T. Golding, general manager, Central State Distributors, Inc.; H. C. Hoffer, sales manager, Lindeman-Hoffer, Inc.; T. T. Koplin, advertising manager, Brown & Hall Supply Co.; Arthur R. Lindburg, president, Arthur R. Lindburg, Inc.; W. O. Waldsmith, president, Del-Home Light Co.; Fred A. Weibe, vice president, Brown & Hall Supply Co., and Henry Weis, Jr., president, Zerozone St. Louis Co., constitute the general committee of arrangements.

Arthur E. Schanuel, vice president of the Hart Vance Advertising Co., is director of the Bureau, with headquarters at 207 Union Electric Bldg.

STRINGHAM REPORTS UPTURN IN SPRING BUSINESS

DES MOINES, Iowa—The Ward B. Stringham Co. reports a 100 per cent gain in the sale of G. E. refrigerators the first three months of this year over the same period in 1930.

The company is now employing 12 salesmen in Des Moines and 10 in Davenport in the retail business, with seven in the wholesale department. Nearly 300 agencies are operating in the Iowa territory.

Stringham's latest installations were made in the Smouse Opportunity School just opened in Des Moines. The refrigerator installed was a CS-450.

SEATTLE PLUMBING CO. NOW COPELAND DISTRIBUTOR

SEATTLE, Wash.—Eckart Brothers have been named representatives for Copeland refrigerators. New display rooms, service quarters and storage facilities have been opened at 419 N. Eighth Ave.

Heading the new refrigeration business of the plumbing and heating organization is C. W. Dawson, who for the past four years has been identified with Copeland sales in this territory.

Associated with Dawson is Done Lane, formerly with Harper-Maggee, who now heads the commercial activities of the department.

CLEVELAND CO. ANNOUNCES MAYFLOWER DISTRIBUTION

CLEVELAND—Mayflower electric refrigeration distribution has been announced by the M. and M. Co., 500 Prospect Ave. Branch stores of the company are located at 2542 Lorain Ave and 14304 Kinsman Rd. There are also

TWO NEW LEAGUES FORMED

NEW YORK CITY—The Society for Electrical Development reports the organization of the Electrical League of Geneva, N. Y., and the Electric League of Asheville, N. C.

This brings the total number of local electrical leagues in the United States and Canada up to 116.

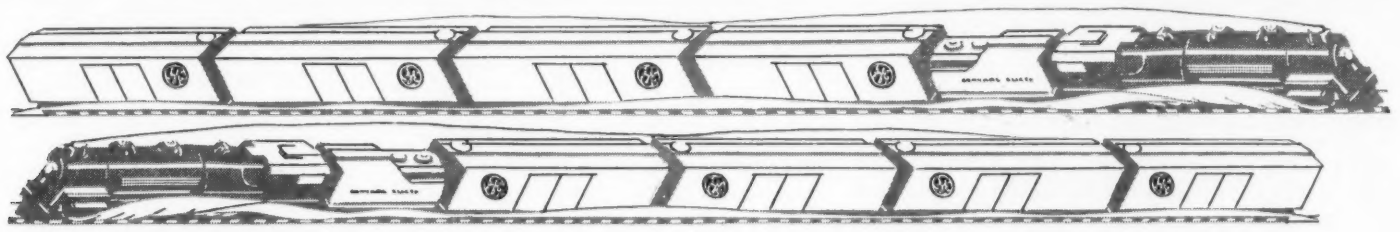
VALKYR UNITS INTRODUCED

CHATHAM, Can.—Valkyr refrigerators, recently introduced to the Canadian market, are being produced by the Hayes Wheels & Forgings, Ltd., of Chatham.

APRIL BROKE ALL SALES RECORDS

NEW SLIDING SHELVES

An exclusive General Electric feature are shown in the above illustration



APRIL 1931, which marked the manufacture of our millionth refrigerator, broke all-time records for sales of General Electric Refrigerators! 1400 carloads, 40 complete train-loads, 18 miles of freight cars—our customers' April orders!

This record is a true compliment to the product and to its 10,000 sales representatives. Proving that it's not geography, but the viewpoint, sales records were broken in all sections . . . east, south, north, west.

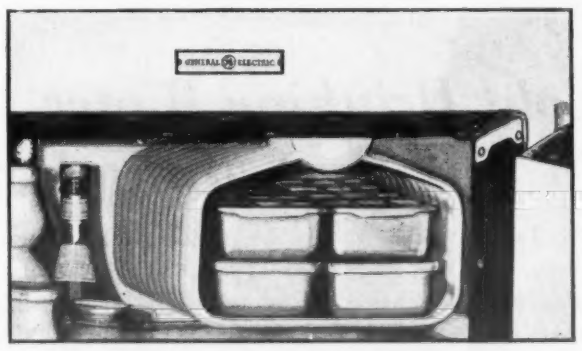
Bennett in San Francisco, Belsey in Los Angeles, Rex Cole in New York and Cooper in Chicago; Schaefer in Milwaukee, Dunning in Duluth, Cope in Memphis, O'Bannon in Little Rock, Stringham in Des Moines—all make the same report: "Best month in history!"

Utilities have launched smashing campaigns. Georgia Power starts 60-day drive..Pennsylvania Power orders 12 carloads . . . Rochester Gas & Electric buys 200 refrigerators . . . Narragansett Electric takes 6 carloads . . . Montana Power Co. gets 7 carloads . . . Empire Gas & Electric, Niagara Hudson System, Gulf States Utilities and American Gas & Electric Company, swing into intensive sales activity . . . And so it goes—There are many others too numerous to mention—these are a few on which we have received reports . . . Everybody after more business—everybody pushing the General Electric—the Refrigerator that sells easily—*and stays sold!*

April was great. But May, June, July—every succeeding month should be greater. We're out to break records for sales, for earning good-will, for making profits—and we're doing it!

General Electric Company, Electric Refrigeration Department, Section DF52, Hanna Building, 1400 Euclid Avenue, Cleveland, Ohio.

INVEST IN AN ELECTRIC REFRIGERATOR



GENERAL ELECTRIC SANITARY SUPER-FREEZER

Full vision, porcelain super-freezer; easy to clean and easy to keep clean. Open—everything simple, sanitary—easy to see and easy to get at.

ACID-RESISTING PORCELAIN INTERIORS

DURABLE ALL-STEEL CABINET

3-YEAR GUARANTEE

on the complete Refrigerator . . . on ALL models

NEW LOW PRICES

Join us in the General Electric Program, broadcast every Saturday evening, on a nation-wide N. B. C. network

GENERAL ELECTRIC

ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE AND COMMERCIAL REFRIGERATORS . ELECTRIC WATER COOLERS

OWENS TO SPEAK ON DEALER RELATIONSHIP

(*Concluded from Page 1, Column 2*)

one of the few states which has actually enacted legislation curtailing the merchandising rights of power companies. Mr. Owens appears to be faced with a difficut task.

He is vice president and general manager of the Oklahoma Gas and Electric Co. He was chairman of the Public Relations Section of the N. E. L. A. for two years.

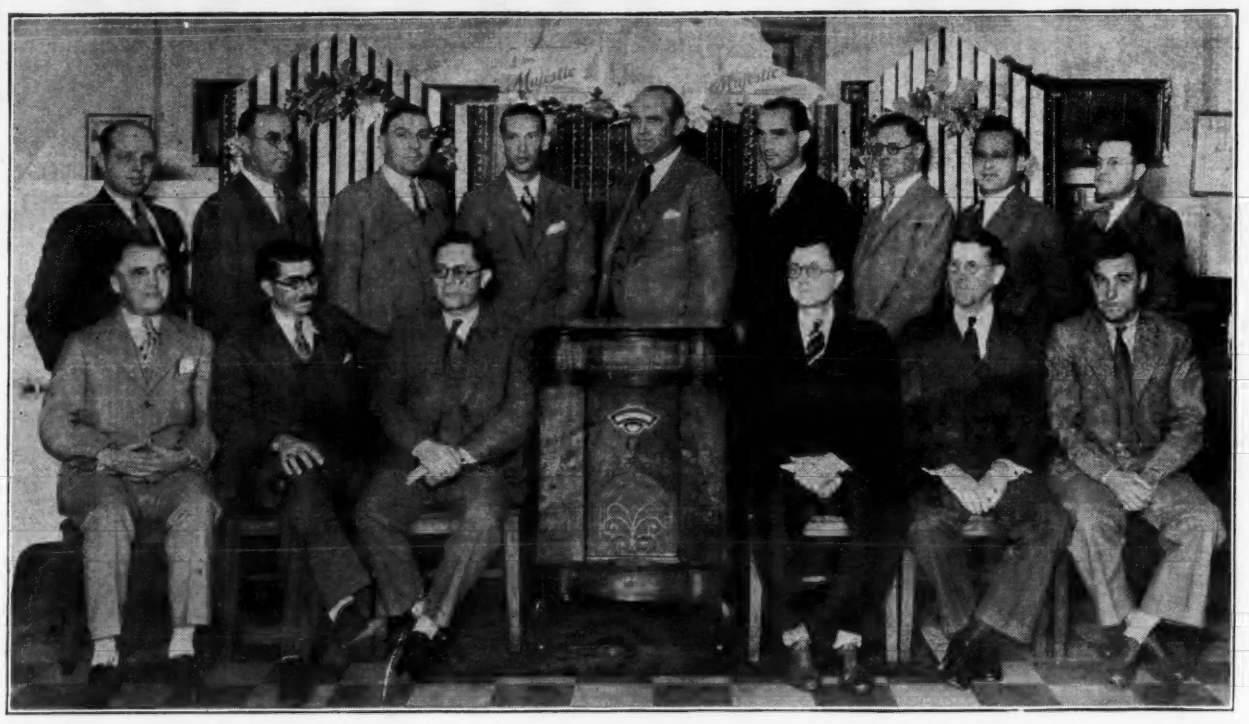
This will be the 54th annual convention and exhibition of the association. It will be held in the mammoth convention hall at Atlantic City, which was first opened to the public at the N. E. L. A. convention held two years ago.

Last year the association went to San Francisco, as it does every five years, according to tradition.

Elaborate exhibitions by the leading manufacturers of electrical equipment, supplies and appliances attract utility men from every state in the Union and from many foreign countries. An attendance approaching 10,000 is expected.

Among the public utility executives who will address the convention are: W. Alton Jones, president of the N. E. L. A. and first vice president of the Cities Service Co.; Harry Reid, chairman of the Public Relations National Section of the N. E. L. A. and president of the National Electric Power Co.; Robert F. Pack, a former president of the association, president of the Northern States Power Co. of Minneapolis; Percy S. Young, treasurer of the association and vice president in charge of finance of the Public Service Electric and Gas Co. of Newark, N. J.; T. O. Kennedy, chairman of the Commercial National Section and vice president and general manager of the Ohio Public Service Co.; and C. E. Groesbeck, president of the Electric Bond and Share Co.

Dallas Company Calls Sales Conference



Officials and salesmen attending the sales conference of the Radio Equipment Co. of Texas at Dallas May 2. (Left to right, seated)—E. W. Carr, Houston branch manager; B. G. Powell, advertising manager; C. K. Cohn, vice president; W. L. Cohn, president; Linwood Griffin,secretary-treasurer; C. H. Vaughan, San Antonio branch manager. (Standing)—J. T. Neislar, Bob Cornelison, G. F. Weber, W. D. McAnally, H. P. Speigel, W. G. Champion, J. A. Hosie, J. S. Schloemer, and F. M. Gabbert.

RADIO CO. TAKES NORGE LINE

DALLAS, Tex.—The Norge refrigerator is now being sold by the Texas Radio Sales Co. of this city, according to a recent announcement. The first sales meeting of the company was held here May 14.

According to Will S. Schnellie, president, the Norge line will be advertised by radio in Dallas.

TEMPRITE Points the Way to Water Cooling in the Home!

A NEW Temprite cooler . . . A unit for use in homes to cool drinking water or beverages . . . Cold drinking water on tap . . . a pitcher of cold water available at all times.

These are some of the points distributors and dealers will use to introduce the new Temprite No. 10 household cooler. A vast market is created with the announcement of this unit.

Cold Drinking Water In Any Part of the Home

The Temprite No. 10 can be installed in any part of the home. For the larger home, a multiple installation provides cold drinking water in the kitchen, bath-room, pantry, recreation room—wherever desired. The cooler has sufficient capacity to meet the requirements of the average household.

Specifications

Dimensions — Height 10 in. overall, Diameter 7 in.
Inner and outer shell—brass, heavily tinned.
Capacity — 4 gallons per hour—2½ qt. storage.
Finish—Dull nickel.

Duplexed With the Household Refrigerator

All Temprite coolers may be duplexed with other lowsides. The new No. 10 is no exception. The No. 10 Temprite can be duplexed with any standard refrigerator by using pressure control if the refrigerator is not already so equipped. For installations of the No. 10 Temprite for average home requirements the compressor which operates the household refrigerator will handle the water cooler with but slight additional running time. Multiple installations in large homes may require an additional small compressor. The No. 10 is equipped with a standard Temprite Temperature Control Valve which eliminates the need for two temperature valves in duplexed installations.

Ideal for Beverage Cooling

This new household cooler is ideal for cooling draft beverages. The entire cooler is made of brass with all parts in contact with water or beverage heavily tinned. The temperature setting of this cooler is normally from 40° to 45° which is a suitable setting for both draft beverage and drinking water.

Distributors and dealers are invited to write or wire for selling information and prices on this new Temprite cooler for the home.

LIQUID COOLER CORPORATION
6527 Russell Street » Detroit, Michigan

Western Coast Distributors: Refrigeration Products, Ltd.,
1110 North Alameda St., Los Angeles, Cal.

FRIGIDAIRE SHIPMENTS IN APRIL SHOW INCREASE

(*Concluded from Page 1, Column 5*)

paign for local employes of General Motors, which resulted in more than 1,000 sales during its first four days.

Final records for April showed that the Stover Co., Chicago distributor, sold more than 185 per cent of its quota.

This exceeded by several thousand dollars the previous Stover Co. records, which was made in 1929 when more than $1,000,000 worth of list price business was sold by this concern.

NEW SERVEL DISTRIBUTOR APPOINTED IN CLEVELAND

CLEVELAND, Ohio—The Cleveland Talking Machine Co., has announced its appointment as distributor of Servel Hermetic refrigerators. Dealers appointed by the new distributor include Broadway Electric Shop, Brown Bros., Euclid Music Co., Fraiberg Co., Liberty Electric Co., the May Co., J. C. Stepanek & Son, Thorne-Hawk Body Co., Wood Specialty Co., and the Rudolph Wurlitzer Co.

The May Co. is the only department store on the list. Liberty Electric is the only dealer having two branches. Most leaders already carry at least one other make.

EASTMAN HEADING FOR NEW SALES RECORD

FRYEBURG, Me.—Robert D. Eastman, proprietor of a general store which sells Frigidaires, isn't worrying about whether it's a depression or a recession that ails business. He is too busy selling electric refrigerators.

His sales in this prosperous farming community from Jan. 1 to April 15 were 300 per cent ahead of his sales for the entire year of 1930. Mr. Eastman recently sold eight household units in three days.

G. E. SCHEDULES CONFERENCE FOR SALES PROMOTION MEN

CLEVELAND—A conference of sales promotion managers of General Electric refrigerator distributors will be held June 18 and 19 at Refrigeration Institute, according to Walter J. Daily, sales promotion manager for the electric refrigeration department, General Electric Co.

Advertising and sales promotion plans for the last half of this year will be presented at the conference.

BALTIMORE DISTRIBUTOR BREAKS 1930 RECORD

BALTIMORE—Sales of Copeland refrigerators in this territory in 1931 have exceeded the total sales for 1930, according to Howard McCarthy, Jr., manager of the electric refrigeration division, Eastern Hardware & Supply Co., Copeland distributor.

RICHARD R. YOUNG DIES

NEWARK, N. J.—Richard R. Young, vice president in charge of sales of the the Public Service Electric & Gas Co. of this city, died in the Roosevelt Hospital in New York City, April 30.

N. E. L. A. SWINGS INTO ACTION ON CAMPAIGN

(*Concluded from Page 1, Column 1*)

eration Bureau of the N. E. L. A. had perfected a strong local organization, and where various manufacturers were working in full harmony and accord with the plans and policies of the 1931 refrigeration campaign.

"The highly encouraging business done by our organization in April leaves no room for doubt that the 1931 campaign of the Refrigeration Bureau is getting results, and that it will continue to get results during the remainder of the year."

P. B. Zimmerman, manager of the electric refrigeration department of the General Electric Co., states:

"We want to compliment the Electric Refrigeration Bureau and Chairman Davidson on the unparalleled record of organizing 75 per cent of the country on a greater refrigeration activity for 1931.

"We have just finished the largest refrigeration month in our history. Much of this success must be due to the stimulus of this industry movement.

"Every distributor, dealer and salesman in the General Electric refrigerator family is encouraged to lend his utmost cooperation to this market development program which has been so successfully started.

"With this activity in operation nation-wide, the Bureau may expect the million mark to be reached in refrigerator sales for 1931."

A. M. Taylor, director of advertising for the Kelvinator Corp., writes:

"It might interest you to know that I am devoting considerable time to the Electric Refrigeration Bureau movement in my talks before Dealers' Meetings—both Kelvinator and Leonard.

"The fact that Kelvinator showed 41.8 per cent increase in business during April over the best previous month's business in its history, is an indication that something is helping, and I believe the advertising and promotion efforts of the Electric Refrigeration Bureau should be given its just share of the credit."

States H. W. Burritt, vice president in charge of sales for Kelvinator Corp.:

"The whole industry will benefit from the Electric Refrigeration Bureau drive. The amount of benefit that those who are selling Kelvinator will derive depends upon the degree of heartiness with which they cooperate in a tie-in with the campaign.

"May I express the hope that the Kelvinator distributor-dealer organization will again demonstrate its ability to realize opportunity, and cooperate wholeheartedly."

Carl D. Taylor, of Westinghouse, writes:

"The interest in this drive, as a result of the activity of the Electric Refrigeration Bureau, is increasing, and it is my opinion that this will be cumulative through the balance of the year.

"It is my opinion that everyone who participates in this activity will receive much benefit, and this benefit will be by an increased volume of refrigerator sales."

Other business interests welcome the campaign, as is illustrated by the following letter from the Boise, Idaho, Chamber of Commerce to the local Electric Refrigeration Bureau after its April joint exhibit:

"Your Bureau is to be congratulated on your cooperative effort in presenting for Boise a high-class refrigeration show. As a Chamber of Commerce we are especially interested in the effort of your Bureau as a cooperative enterprise.

"It is this type of cooperation that has made Boise the trading center for an ever-growing trade territory, and we welcome your efforts as a real contribution to the growth of the business volume of our city.

"Please accept this letter in token of the good will of your Chamber of Commerce, which is always interested in progressive business methods."

Thousands of show windows, sales counters, billboards, trucks, and business cars are now displaying the Bureau promotional materials.

Fifty thousand dollars worth of business was secured by the exhibitors during a recent medium-sized New Jersey show. Kansas City, New Orleans, Philadelphia and many smaller towns have proved to their own satisfaction in the same concrete manner that joint action gets action. Exceptionally commendable results have been secured by bureaus in Cleveland and Philadelphia, it is reported.

CONNORS SMASHES HIS 1931 FRIGIDAIRE QUOTA

NIANTIC, Conn. — Frank Connors, Connecticut Light and Power Co. salesman here, is first in the United States to be reported as having sold his year's quota in the entire Frigidaire organization. He went over the mark April 25.

Just as a little sample of the way Connors has been disposing of the Frigidaires is the fact that for the six weeks ending as of April 25 he sold 36 household cabinets to 36 different persons or an average of one cabinet every working day.

What of Your Cabinet— 10 Years From Now?

When the throb of motors overhead rivals the roar of busy thoroughfares . . . when commuting means a two-way jaunt of a hundred miles or more . . . when gaunt sky-piercing towers harbor dirigible waiting-rooms, and every family has its autogiro on the roof . . . what about the refrigerator cabinet you sold back in 1931?

Is it still bringing arctic chill to kitchens where it's summer all year round? Is the high efficiency of 1931 still bringing complete satisfaction to its owner?

You need never question the insulating efficiency of your cabinet if Dry-Zero Pliable Slab is in the walls. Rated the highest of any commercial insulation, by impartial authorities, Dry-Zero insulation has life-time permanence—not only physically in its absolute refusal to disintegrate, settle or crack, and its unique aversion to moisture, but life-time permanence of its extreme efficiency.

Dry-Zero Pliable Slab gives your cabinet the edge on competition and assurance that the insulation will give efficient service for the life of the refrigerator.

DRY-ZERO CORPORATION
Merchandise Mart - Chicago, Illinois
Canadian Office - 465 Parliament Place, Toronto

DRY·ZERO
THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

TEXAS DEALER GIVES MERCHANDISING TIPS

SAN ANGELO, Tex.—"Every logical prospect has a weak spot somewhere, by attacking which it is possible for us to demonstrate that modern refrigeration is now not only an everyday necessity, but the answer to his particular problem.

"Our main selling plan is to find that weak spot and concentrate our efforts upon it."

So declares Frank Findlater, vice president of the Findlater Refrigeration Co.

Some men will listen to an argument as to economy when all other arguments fail, Findlater has learned. In such a case, the company has developed a highly practical sales talk. It reverts back to a comparison with electric lights and oil lamps in the home, and it points out how much more economical electric refrigeration is than electric lights.

Health usually proves to be an excellent sales argument, this firm finds, especially in talking to housewives with children. Accordingly, the home in which there is a new baby is usually an exceptionally good prospect for a unit.

Findlater men watch for news of births; and as soon as they believe it to be practical, they make an appointment and see the mother about a new refrigerator.

In practically every genuine prospect there is some point upon which it pays to dwell, this firm finds. Recently one of the salesmen placed a unit in a modern home under the vehement protests of the housewife.

He had seen her repeatedly and talked to her on the economics and health features of modern mechanical refrigeration and the desirability of such a convenience. She refused to be interested. She would not permit the salesman to bring out a unit and connect it up for her to try.

About the time that the salesman had despaired of ever making a deal, the husband came upon the scene. He saw the possibilities of the unit at once and in a moment he had dropped a hint as to his "weak spot."

The final outcome was that he ordered the unit sent out, in spite of his wife's protests. It was connected and eventually the wife too became a real booster of it. And the reason the husband wanted it was because it was such a practical thing in which to cool his beer!

This company does not find it practical to canvass house-to-house in search for prospects. A salesman does not call at a home until he has made previous arrangements for the visit.

The company's most consistent source of real prospects is through users it already has sold. The man who sells the unit follows it up every now and then, inquiring about the service the customer is getting and "incidentally" inquiring about friends or relatives of the user who have expressed a desire for such a unit.

"We also find good prospects through lumber dealers and architects," Mr. Findlater points out. "Naturally every new home is an excellent place in which to place a unit; but if we wait until the building permit is announced, it sometimes is too late to get after the prospect. Accordingly, we make periodical visits to lumber dealers and architects and induce them to tell us of any homes which they are planning.

"We then can see the builders of these homes and begin talking mechanical revisible signs of construction.

"Even though a man tells us positively that he is not going to buy a refrigeration even before there are any frigeration unit, we still urge him to plan his new home for mechanical refrigeration, pointing out that eventually he will want it; and when he does, he will appreciate our interest in inducing him to plan for it.

"Thus, even though we do not place a unit at the time the home is built, we still have the inside track when the prospect does decide to buy, because he appreciates our efforts."

Another feature that has aided this company materially in boosting its line in the territory is publishing periodically a list of users whom it has already sold.

Golding's Caravan Makes Trip to Evansville

Members of A. T. Golding's party which inspected the Servel plant in Evansville, Ind.

DEALERS IN ST. LOUIS VISIT SERVEL PLANT

EVANSVILLE, Ind.—In the early hours of the morning of May 3, two large motor busses and a caravan of private automobiles crossed the Mississippi bridge at the outskirts of St. Louis and moved toward Evansville carrying approximately 100 members of Servel domestic and commercial leader and distributor organizations headed by A. T. Golding, general manager of Central States Distributors, St. Louis.

Arriving at the Hotel McCurdy, Evansville, at 6:30 a. m., they were met by a group of department heads and executives of Servel Sales, Inc., who entertained the party at breakfast at 7:30 o'clock, before going to the Servel factories at the northeast edge of the city.

Headed by a number of factory guides, they were first assembled in a large classroom in one of the factory buildings. Here S. R. Cooper, official school instructor for Servel Sales, Inc., reviewed briefly the new features of the Servel Hermetic unit, and then issued instructions to guides for the long trip through the maize of plants and machinery covering the 30 acres occupied by the Servel factories.

At 9 o'clock the tour of the factories started. From one manufacturing division to another, the party of interested spectators were presented a first-hand picture of the processes employed in the manufacture of Servel Hermetic electric refrigerators.

The tour was made on Sunday, but to the surprise of many of the visitors, the various factories were in operation as though it were any other day in the week.

At noon the long march was halted for 30 minutes in order to obtain photographs of the party as they assembled on the green lawns outside the Porcelain Division. At 12:30 p. m., the tour was renewed.

Lunch was served at 1 o'clock in three improvised dining rooms, decorated for the occasion by Don Haering, safety and recreation director for Servel, Inc.

During the luncheon, which was the final event on the official program for the day, short talks were made by V. E. Vining, sales manager; A. T. Golding, general manager of Central States Distributors; W. Paul Jones, manager of advertising and sales promotion, and T. A. Flaherty, of the sales department. Other members of the Servel domestic and commercial organization present were introduced.

MAJESTIC DISTRIBUTOR TO FORM CENTURY CLUB

CHARLOTTE, N. C.—Announcement of the "Majestic Century Club" was one of the highlights of the recent series of refrigeration sales schools conducted in North and South Carolina by Shaws', Inc., Majestic distributor.

The "Century Club," according to Harry P. Shaw, Sr., will be an organization of Majestic representatives who have completed their 100th sale. A century ring and a certificate of honor will be presented to each member by Shaws'.

Schools were held at Charlotte, Columbia, S. C., Greenville, S. C., Asheville, N. C., Winston-Salem, N. C., and Charleston, S. C. Some 300 dealers and salesmen attended the schools held in these cities.

The series opened at Charlotte with an elaborate program for the 115 dealers who turned out for the conference. Furman Ferguson, sales promotion manager, presided over this meeting.

Speakers at this meeting were Oliver Shaw, secretary and treasurer; Clarence O. Kuester of the Charlotte Chamber of Commerce; T. F. McMurray of the refrigeration merchandising department of the Grigsby-Grunow Co., and W. S. Howell, refrigeration sales manager of Shaws', Inc.

Both morning and afternoon sessions were held in all of the cities in which the meetings were held. At the Charleston school, Harry P. Shaw, Jr., made the address of welcome.

HALLSTEIN HEADS CHICAGO PURCHASING AGENTS

CHICAGO—Heading the Purchasing Agents Association of Chicago as president for this year is W. H. Hallstein of the Ilg Electric Ventilating Co., who was elected to office at the recent annual meeting.

Other officers are: H. J. Reefe of the Independent Pneumatic Tool Co., Inc., first vice president; E. L. Van Vechten of the National Air Transport, Inc., second vice president; James Shepherd of the Sivyer Steel Casting Co., treasurer; and F. J. Heaslip of the Fairbanks, Morse & Co., secretary.

Research and analyzation of commodities, their new applications and future prices, make up part of the program which has been outlined by the Association for 1931.

"Statistics show that the purchasing power in the Chicago territory amounts to more than $750,000,000 annually," Mr. Hallstein said.

CROSBY TAKES POSITION WITH MAJESTIC-CINCINNATI

CINCINNATI—Don Crosby, formerly with the Milnor Electric Refrigeration Co. has been made manager of the refrigeration department of the Majestic Distributing Co.

FIVE LEONARDS INSTALLED IN NEW APARTMENT

SOUTH NORWALK, Conn.—The Sterling Furniture Co. has placed 5 Leonard electric refrigerators in the new Timmons apartment house at 119 East Ave.

SALES IN ALABAMA EXCEED RECORDS OF LAST YEAR

BIRMINGHAM, Ala.—The Alabama Refrigeration Co., and other Birmingham General Electric distributors for the state, announce that so far this year sales have been twice as large as the sales for the same period last year.

Special attention is being given to commercial sales by refrigerator companies in this city. A list of companies buying anything from small household refrigerators to water coolers includes real estate offices, bakeries, meat markets, department stores, hospitals, groceries, and the City of Birmingham.

Servel equipment was placed in the delicatessen department of the Twentieth Century Bakery recently.

A General Electric CS-601 unit was delivered recently by the Alabama Refrigeration Co., to Lonto's Cafe. The Domestic Electric Co. has sold a Frigidaire to be placed in the kitchen of the new Alms House.

Installation of a Frigidaire water cooler was recently made in the New York Life Insurance Co. office. Two General Electric DP1 water coolers were recently installed in the offices of the Jemison Co., real estate dealers in the South.

DENVER DEALERS ACTIVE IN N. E. L. A. CAMPAIGN

DENVER—Nine refrigeration companies are participating in the movement sponsored by the Electric Refrigeration Bureau. George B. Buck, merchandise manager of the Public Service Co. of Colorado, is regional director for this territory.

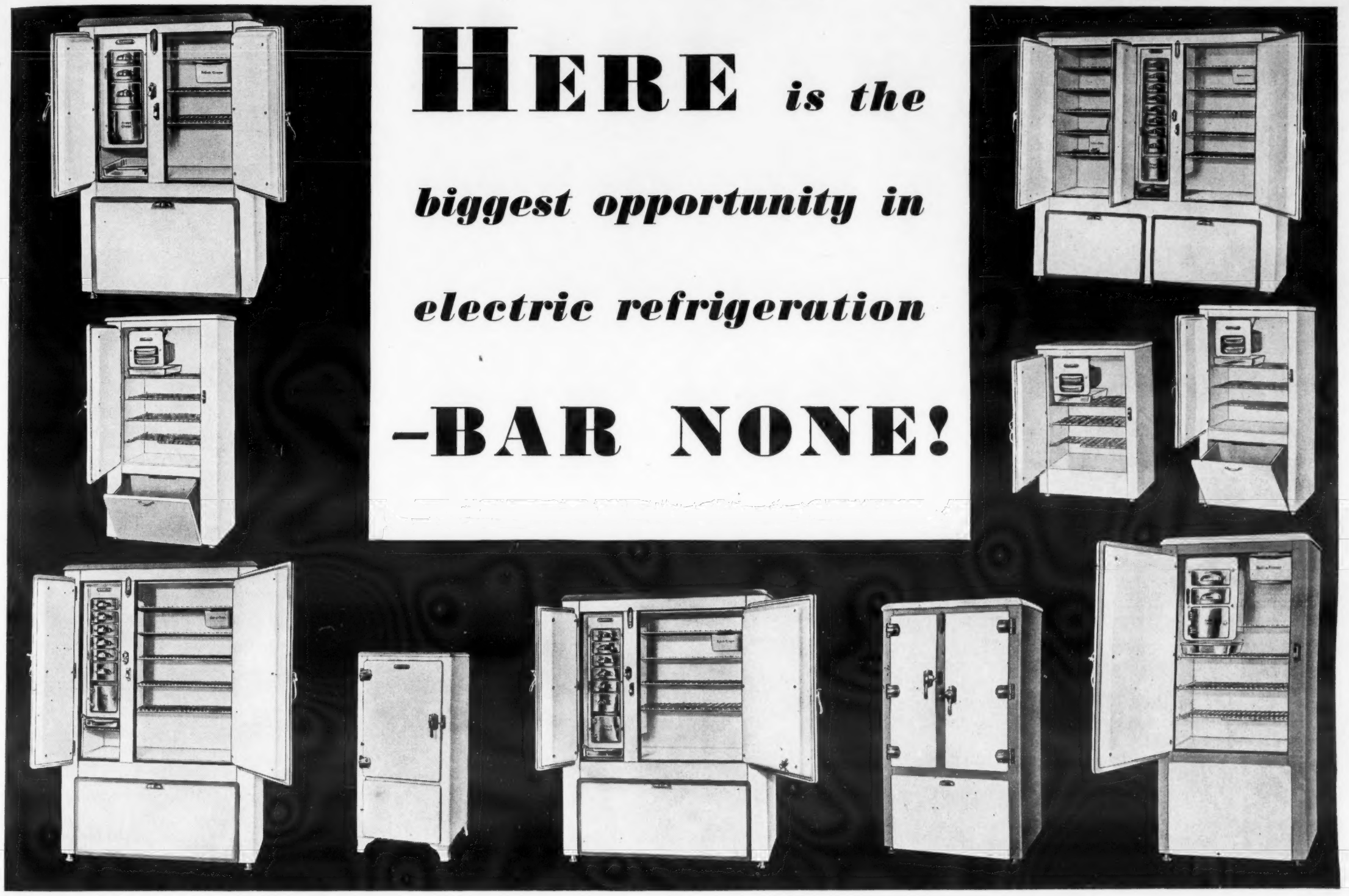
Participating in the refrigeration campaign are: the Public Service Co. (Kelvinator); O. T. Carpenter and the American Furniture Co. (Frigidaire); Rocky Mountain Corp. (Copeland); Foster Auto Supply Co. (Ice-O-Matic); Winter-Weiss Co. (Servel); Auto Equipment Co. (Norge); Knight-Campbell Music Co. (Mayflower), and B. K. Sweeney Electric Co. (General Electric).

Special newspaper and outdoor advertising is being employed by the local bureau.

NEW THEATRE IN KANSAS IS EQUIPPED BY DEALER

SALINA, Kan.—The Carlisle Radio Co., Kelvinator dealer, recently installed water cooling equipment in the new Watson Theatre here.

Bubbler coolers were installed in the lobby and on the mezzanine floor. The equipment included one F-10 Kelvinator compressor and one F-10 Day and Night water coolers.



HERE *is the biggest opportunity in electric refrigeration* —BAR NONE!

OF ALL the electric refrigeration franchises available to-day, none offers a dealer such a completely satisfactory agreement as Kelvinator.

No other franchise has such a complete line of merchandise—or such a salable one. Kelvinator, with fifteen different Cabinet Models, gives the dealer *full market coverage.* This coverage, in every price field, means greater volume and bigger profits—with the same overhead. With Kelvinator, there are no "walkouts" because of inability to meet size and price requirements. Every prospect for an electric refrigerator is a Kelvinator prospect—*your* prospect if you are handling the *full-coverage, full-profit* Kelvinator Line.

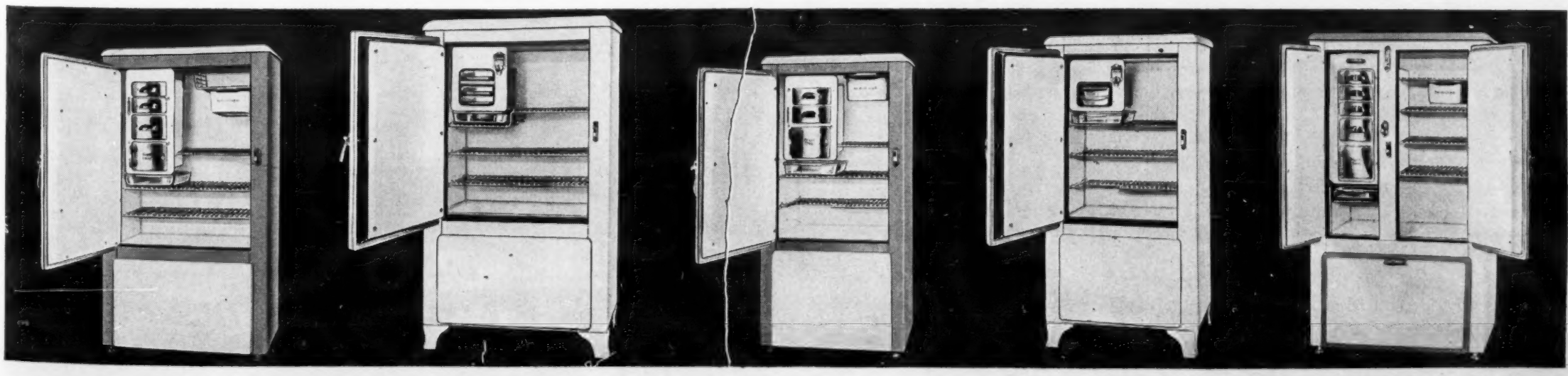
And, in addition to the Kelvinator merchandise, consider the fairness of Kelvinator policies; the progressiveness of the organization; the recognized leadership and public acceptance of the product; and the liberal terms of the Kelvinator Sales Agreement.

The Kelvinator Franchise is the biggest opportunity in electric refrigeration to-day—*bar none*—and if you are interested in going into this further, let us send a representative to give you all of the facts.

KELVINATOR CORPORATION
14245 Plymouth Road, Detroit, Michigan
Kelvinator of Canada, Ltd., London, Ontario
Kelvinator Limited, London, England

Kelvinator

(302)



MERCHANDISING SECTION
ELECTRIC REFRIGERATION NEWS
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Who Is Selling Refrigerators?

INFORMATION forthcoming from several electric refrigeration sales organizations during the last few months indicates that there may be forthcoming a revision of prevalent notions on the wide extension of refrigeration sales outlets to new retail fields.

Reports from some of the industry's leading manufacturers show that the real selling job is being done by a few well-organized and directly controlled specialty selling concerns, which merchandise electric refrigerators exclusively, and which cultivate their markets intensively.

The NEWS estimates that not more than 100 large distributing organizations account for 50 per cent of the electric refrigeration sales being made today, and that a maximum of 500 distributors are doing 85 per cent of the total business.

In almost every case these top-notch distributors and retailers are exclusive refrigeration sales organizations which are making good use of excellent sales promotion facilities, and which work together on closely knit programs.

It is fortunate for the industry that the need for these highly trained specialty selling companies was recognized during earlier years of the industry, and that these organizations are now functioning in satisfactory manner. Public utility sales are reported to be considerably below standard this season, and although the drives which some of the large central stations are initiating this month may help bring up the total, prospects for great sales increases from this quarter do not appear to be particularly reassuring at the present moment.

Nor do the numerous non-exclusive sales outlets which have been added to dealer rosters during the past several months seem to be living up to their early promise. Department stores, with some notable exceptions, have not provided the quantity of business which was enthusiastically predicted earlier in the year. A great many hardware and furniture dealers have not demonstrated that they have caught the idea of specialty selling. From the ranks of drug stores, music stores, and other miscellaneous retail outlets some good dealers have been obtained, but their numbers as yet have not assumed sizeable proportions.

Radio dealers were hard hit last year, and as a consequence have been eager to acquire profitable electric refrigeration franchises, in order that they might lower overhead costs and add enough extra trade to stay in business. As a result, radio retailers have joined the ranks of refrigeration dealers in wholesale numbers.

Some radio distributors have done outstanding merchandising jobs with electric refrigerators. In a great many cases, however, radio salesmen have not proved to be effective refrigeration order-getters. This situation may be remedied in time, when radio men learn more about refrigeration and about the sales problems peculiar to this industry. At present, however, their efforts cannot be well compared to those of the exclusive set-ups.

Extensive distribution has served a valuable purpose. It has provided more display for electric refrigerators, more contacts with the public in scattered areas. It has helped in a measure to spread the gospel of scientific food preservation, and to give added significance to the national advertising campaigns which have been instituted by many manufacturers. The fact still remains, however, that the bulk of electric refrigeration business is being done by a comparatively few sales outlets.

No doubt one reason why these exclusive electric refrigeration organizations have been successful is that they had to sell refrigerators, or go out of business. Consequently, they have developed an effective technique, and have shown themselves more and more capable of doing intensive and aggressive merchandising. Just as obviously, retail stores with other lines to sell have not found refrigeration sales vital to their existence, and to them the electric refrigerator has simply been another item of merchandise.

When the electric refrigeration industry began to assume sizeable proportions, intensive specialty selling was the order of the day. After a trial of extensive distribution, the industry has found that most of its sales are still being made by a small number of specialty selling companies. Apparently the electric refrigerator is not yet an over-the-counter commodity.

* * *

Good News

ANYONE who wonders how business is going in the electric refrigeration industry need only glance at the front page of the last issue of ELECTRIC REFRIGERATION NEWS. Thereon was announced the fact that new high sales records were established by important factors in the industry during April, that some companies enjoyed April sales far above those of last year, and that in some cases all-time marks were established.

Down in Evansville, Indiana, the Servel factories are engaged in supplying the refrigeration (Servel Hermetic and Electrolux refrigerators) and automotive (Hercules gasoline engines and truck bodies) trades. Sales for the automotive division were 75 per cent below those of last year, yet the big gains in refrigeration sales made April the best month in the history of Servel, Inc.

Shipping 1,400 carloads of electric refrigerators during April, the refrigeration division of the General Electric Co. had the best month in its history. So, too, did many of the outstanding G. E. distributors, including Rex Cole in New York City and R. Cooper, Jr. in Chicago.

Kelvinator reports the best April in its 17 years of existence; while sales of its companion, the Leonard electric refrigerator, are running 70 per cent better than quota. Copeland officials announce that April sales, like those of other months this year, are far ahead of 1930.

Universal Cooler, which has just acquired Absopure, is getting more business than it has had in any previous period of its existence. The Sunbeam Electric Co., which manufactures units for Sears, Roebuck & Co., Tennessee Furniture Co., and others, is said to have enough unfilled orders on hand to keep its plant running at capacity until late next fall.

Since the last issue of the NEWS, Frigidaire executives have announced that carload shipments in April were 23 per cent above the corresponding month of 1930, and that Chicago, Davenport, and Sioux City sales territories did the greatest business in their respective histories.

Also from Dayton comes news that Trupar recorded a 347 per cent sales increase over April, 1930, and that during the first four months and the first ten days of May, 1931, more orders have been booked than were received during the entire year of 1930.

In almost every case these reports are accompanied with predictions by company presidents that May sales should exceed those of April by considerable margins.

To belong to an industry which is moving forward while general conditions remain quiet provides both an incentive and a challenge. When so many examples may be had of the results accruing from intense market cultivation and persevering labors, anybody connected with the electric refrigeration industry should see that he who slacks up will likely be left in the dust of his more aggressive contemporaries.

It seems entirely probably that the electric refrigeration sales curve may be extended considerably beyond its usual bounds this year, and the company which curtails its program may fail sadly to share in the general progress of the industry.

Letters from Readers

Utility Merchandising

Editor:

The "Editorial Aims of the News" include two principles which you announce, to-wit: "To promote ethical practices in the business;" and "To foster friendly relations throughout the industry."

In an editorial in your paper in the April 24, 1929, issue, commenting upon the indictment by Merchant & Evans Co. of public utility merchandising, you stated your faith "in organized educational effort" to remedy evils in utility merchandising methods.

Would you care to review the course toward a solution during the last two years and point out, if you can, the progress that has been made toward a settlement of the issues involved?

Frankly, I can see no progress toward solution at the initiative of the public utilities, but it is clear that great advances have been made by those who recognize the abuses that exist and are fighting the reactionary "stand pat" utilities, in an effort to put an end to such abuses.

Witness the results embodied in legislation already enacted in Kansas, Oklahoma and Wisconsin, prohibiting utility merchandising; and witness further, legislation pending in Tennessee, Texas, Pennsylvania, Illinois and other states.

In Missouri the utilities succeeded in defeating pending bills to the same purpose. In Pennsylvania the Philadelphia Electric Co. defeated Merchant & Evans Co. in the courts, establishing their charter power to engage in merchandising, thereby indelibly impressing upon the public conscience the necessity for legislative action to define the proper scope of utility activities.

There is no question but that there is a great awakening consciousness, throughout the country, of the need of strict regulation of the utilities, with the purpose of forcing them to confine their activities to the proper sphere of furnishing the commodity which they were created to furnish and for which they were invested with monopolistic rights in their several communities.

In its general "Protest Against Public Utility Monopoly Competition in Electric and Gas Appliances and Merchandise" embodied in its complaint before the Federal Trade Commission, filed on May 31, 1928, Merchant & Evans Co. revealed in great detail the existing abuses in merchandising methods of the utilities and pointed out the injury being inflicted upon all independent merchants in attempted competition with the utilities.

The entire complaint, with a mass of additional data, was published by Merchant & Evans Co. in pamphlet form in March, 1929, and was followed by a subsequent pamphlet containing "An Open Letter to U. S. Senators and Congressmen" under date of April 21, 1930.

We have constantly urged upon the leaders of the utility industry, through letters and publications, the innate impropriety and injustice of public utility merchandising and the inevitable abandonment of such activity by the utilities, either through choice or from necessity.

Monopoly is inconsistent with competition. Utilities cannot enjoy a monopoly in furnishing electricity and gas and fairly compete from such an established position with independent merchants with no support from the state. Utilities are quasi-public by nature of their monopolistic powers, and to allow them in competition with independent merchants is to introduce "government in business" in "simon pure" form.

Utility merchandising is utterly unsound and would, I am convinced, be held so if the question could be brought before a court for judicial decision on the merits.

There were some "good" utilities, some not so good, and some very bad; but benevolent or malevolent, they have done as they pleased. The spectre of railroad regulation, springing from a like attitude on the part of the railroads 25 years ago, did not terrify or, in fact, make any impression upon them.

Two years ago we suggested conferences under private or public auspices for the discussion of the merchandising abuse. We urged upon utilities for consideration the proposition of voluntary retirement from merchandising competition. We pointed out the inevitable result.

Your journal has always been open to discussion. Your announced principles would allow you logically to suggest to utilities a change of front, which is certainly in order. They should "clean house" and try to re-establish themselves in the public confidence by establishing fairer rates, which should be lowered in order to help the country out of the present depression, and they should abolish existing abuses.

Any voluntary action looking to these ends would certainly soften the regulation respecting their alien activities, the cost and losses on which are too frequently charged to the public through expense accounts.

Such regulation is inevitably to take place as a result of public resentment, and will probably go farther than if many of the utilities did not really need a good "spanking."

THOMAS EVANS,
President, Merchant & Evans Co.

'Home-Kept Ice Cream'

San Francisco, Calif.

Editor:

Refrigerator men of the west coast are learning not to sell the idea of "home-made ice cream" with their refrigerators, but "home-kept ice cream," because ice cream and confectionery stores, also good customers of electric refrigerator firms, are keenly objecting to the housewife being sold on the idea of making her own ice cream in the home.

Confectioners point out, with good reason, that it is better to sell the housewife on the plan of keeping a constant supply of ice cream on hand, ready in her electric refrigerator for the unexpected guests, without having to send Johnny scurrying around the corner for a supply—always an awkward thing to manage.

Ice cream firms also point out that the home-made ice cream is seldom as well made as the factory-made product.

As one prominent confectioner puts it, "The electrical dealer does not install a new stove in the home with the thought of telling the housewife to bake her own bread—then why should he install a new refrigerator in the same home and promptly make it a sales point to tell the household that they can now have home-made ice cream?"

S. LEWIS BREVIT.

Reads His "Bible" on Arrival

New York, May 8, 1931

Mr. F. M. Cockrell:

In your favor of May 5th you ask "Is it possible that you (I) have not been reading ELECTRIC REFRIGERATION NEWS for two years." On the contrary, it would be quite impossible for me *not* to read this most interesting and informative publication. In the old days I used to read my Bible daily, but having it now practically committed to memory I need to do so no more. I now make it a point to read each issue of ELECTRIC REFRIGERATION NEWS on its arrival. I have also read the March 25th and April 8th issues, but for some reason unknown to me, they are not in my bound files which is the reason for ordering the extra copies.

A part of our religion down here is to keep the files of ELECTRIC REFRIGERATION NEWS complete right up to the minute.

Very truly yours,
E. T. WILLIAMS,
Consulting Engineer,
Servel, Inc.

Kind Words Dept.

St. Louis, Mo.

Editor:

Enclosed pleased find my first offering to your publication.

It is always embarrassing to solicit news for a publication and finding that the magazine is unknown. This, however, is not the case of ELECTRIC REFRIGERATION NEWS.

Every distributor upon whom I called was well acquainted with it and spoke highly of its position in its field.

When a publication is well thought of it is a comparatively easier job for the free-lance writer than otherwise. You'll hear from me oftener.

HARRY WILD.

Huntington, W. Va.

Editor:

We feel we could not operate our business without your paper with its instructive, fair and aggressive policy in the interest of all concerned in the refrigeration business from manufacturer to the lowest employe in the game.

ROY MCELHANEY,
Mechanical Refrigeration
Service Co.

San Antonio, Texas

Editor:

Your paper is very good, always interesting. I am naturally interested in commercial installations and Copeland news.

E. B. POTTHAST.

Gruendlers On Vacation

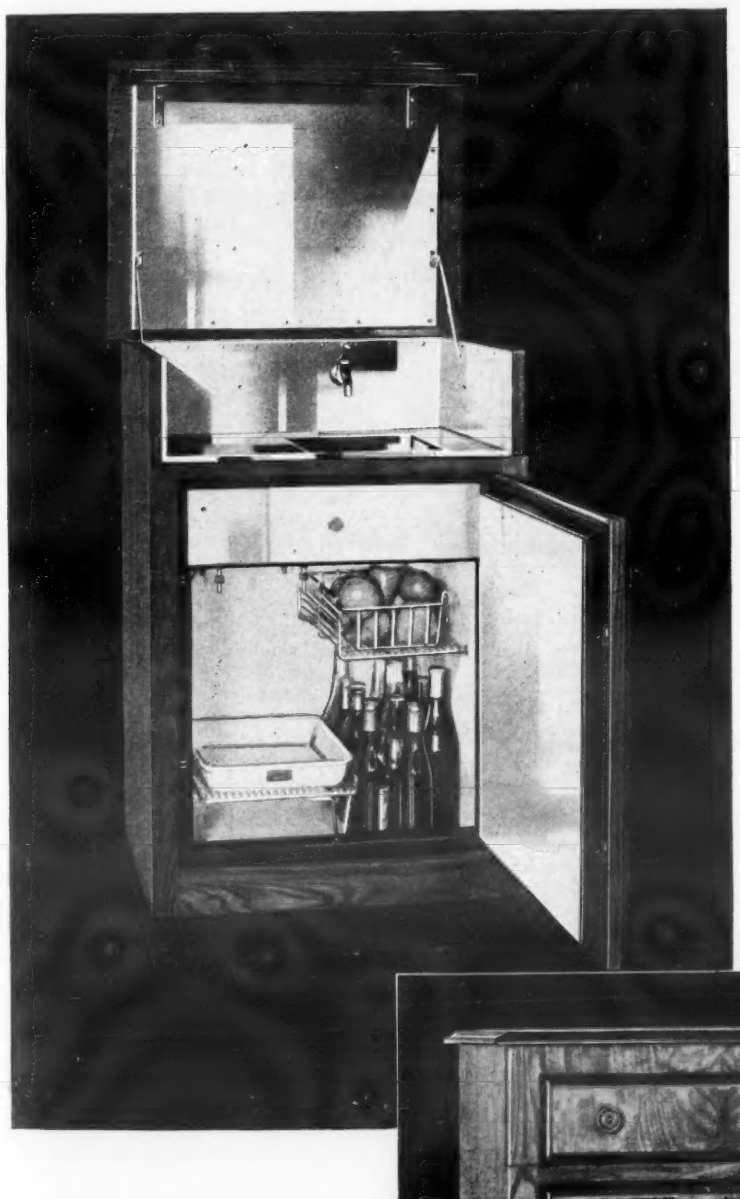
Clayton, Mo.

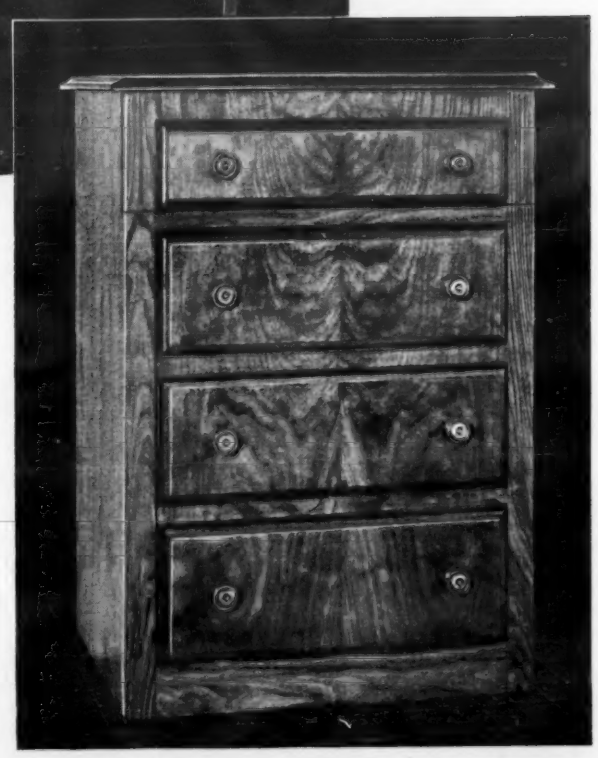
Editor:

I wish to advise you that Messrs. Gustav J. Gruendler, Sr., Louis Gruendler, and the writer are no longer connected with the Hussman-Ligonier Co. of St Louis.

At the present time we are taking a short vacation and will not complete our plans for several weeks.

GUSTAV J. GRUENDLER, JR.





SPECIAL CABINETS

BY

Seeger

SAINT PAUL

The Architectural Division of the Seeger Refrigerator Company offers its cooperation in the origination, designing, engineering and production of "Custom Made" Refrigeration Cabinets.

Many years of experience, world wide in scope, are at the service of those wanting the unusual or the better. Any of the Branches or the Factory are prepared to provide this co-operation.

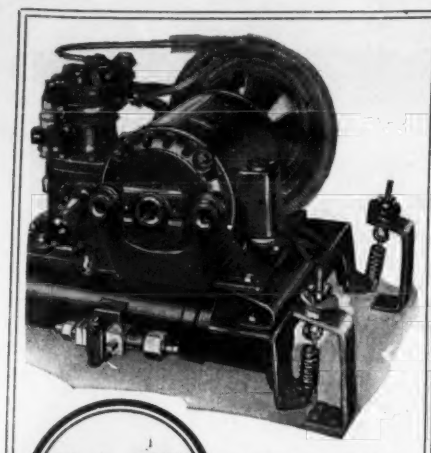
SEEGER REFRIGERATOR COMPANY

Madison Ave., Between 46th and 47th Sts. NEW YORK, N. Y.

655-57 So. La Brea Ave. LOS ANGELES, CAL.

Statler Building BOSTON, MASS.

660 North Wabash CHICAGO, ILL.



"M&E" EFFICIENT LONG LIFE COMPRESSORS

Now Available For

ASSEMBLERS

Thoroly approved apparatus with a long record of success in thousands of outstanding commercial and domestic installations.

The type of equipment that will assist greatly in building prestige and profit for private trademark assemblers.

Capacities 100 to 1300 lb., I. M. C.

Sold with or without controls.

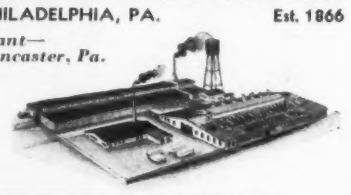
Prompt Delivery!

Write for Data Sheets and New Low Price List

MERCHANT & EVANS CO.

PHILADELPHIA, PA. Est. 1866

Plant—Lancaster, Pa.



McElhinny, Jones, Cline Speak at Conference

Copeland dealers attending the Dallas regional sales convention.

RUNNER COMPANY TAKES FRIGIDAIRE AGENCY

SPOKANE, Wash.—The M. E. Runner Co. has been named Frigidaire dealer in this territory. M. E. Runner, general manager, has opened a retail store and display room at 518 West First Ave.

The new dealer was franchised by the Armstrong Ice Machine Co., Frigidaire dealer for entire Spokane county.

PHILADELPHIA RADIO CO. NAMED MAJESTIC DEALER

PHILADELPHIA—The Universal Radio Corp., under radio broadcasting Station WCAU management, is now selling Majestic refrigerators at its two showrooms in this city.

Sales Gain Reported

DALLAS, Tex.—The spring convention of Texas Copeland dealers was held in the showrooms of the Dallas Copeland Co. recently, with an attendance of 100 representatives.

W. D. McElhinny, vice president of the Copeland Sales Co., Mt. Clemens, Mich., conducted the sales conference.

Ralph W. Jones, general sales manager for the western half of the United States, was one of the speakers at the convention. Paul Harrison, field representative, also spoke.

W. H. Cline, manager of the Dallas Copeland Co., told the convention that the sale of Copeland refrigerators in Texas for the first part of this year was 142.92 per cent more than in the same period of last year.

THIRTEEN DEALERS DISPLAY AT DES MOINES SHOW

DES MOINES, Iowa—Electric refrigerator dealers and distributors were well represented at the annual Des Moines Building and Home Exposition held in this city April 20 to 25.

Approximately 20 per cent of the booths at the show had one or more electric refrigerators on display.

Companies having exihibits were: the Des Moines Frigidaire branch; Des Moines Electric Light Co. (General Electric); Stoner Piano Co. (Ice-O-Matic); Good Housekeeping Shop (Majestic); Heib Radio Co. (Majestic); Anderson Furniture Co. (Norge); Sorensen & Co. (Kelvinator); Home Appliance Co. (Leonard); Des Moines Music Co. (Copeland); Elliot Furniture Co. (Majestic); Davidson's Furniture Co. (Servel); Hamilton Hardware Co. (Norge); and the Globe Machinery & Supply Co. (Mayflower).

SEATTLE WEEKLY FOOD WASTE EQUAL TO COST OF 462 UNITS

SEATTLE, Wash.—Interesting disclosures relative to food wasting in this city were recently revealed by Gordon Prentice, president of Prentice, Inc., General Electric refrigerator distributor.

Mr. Prentice based his statistics on the federal census of distribution for Seattle during the year 1930. He stated that there were 105,000 families in Seattle, spending more than $30,000,000 a year for perishable foods, such as dairy products, meats, fish, fruits, vegetables, etc.

An average spoilage of about 20 per cent, he claimed, was equal to the price of 462 electric refrigerators a week.

DANBURY CO. SELLS OUT

DANBURY, Conn. — The Danbury Electric & Radio Shop, 155 Main St., local distributor for Majestic refrigerators, has been sold to Ralph L. Sherman and Neil Andrews, both of this city.

APEX CO. AUGMENTS CLEVELAND OUTLETS

CLEVELAND—New additions to its dealer force to handle the Apex refrigerator in this district are announced by the Apex-Rotarex Co.

The new dealers are: Altman Furniture Co., 15012 St. Clair Ave.; George A. Wank Electric Co., 11627 Miles Ave.; Doan Electric Co., 7813 Superior Ave.; Apex-Rotarex Electric Store, 12601 St. Clair Ave.; A. Dolgan, 15617 Waterloo Road; Wanda Furniture Co., 7041 Broadway, 6806 St. Clair Ave.; Arnold Electric Co., 16607 Miles Ave.; F. J. Vynhal, Furniture and Hardware Co., 4842 Broadway; Nottingham Hardware Co., 18707 St. Clair Ave.; Ranello Co., 12101 Mayfield Road; L. Vuchak, 16013 Waterloo Road.

Enterprise Electric Co., 6509 Euclid Ave., and 13100 Shaker Blvd.; Benesch-Federman & Co., 5432 Broadway; Chas. Vlasek, 17276 Libby Road; Benesch-Federman & Co., 3205 East 93rd St.; Fiordalisi Furniture Co., 12208 Mayfield Road, 16117 St. Clair Ave.; Jones Electric Co., 2014 East 105th St.; Blum Furniture Co., 11910 Superior Ave.; S. Kohn & Sons Co., East 105th St. and St. Clair Ave.; City Hardware Supply Co., 10546 Euclid Ave.

Double Duty

W. H. SEROY

President of Zerite Products, Ltd., who is also serving as Pacific Coast representative for Trupar.

JAMES & CO. OPENS APPLIANCE SHOP IN SPRINGFIELD

SPRINGFIELD, Ill.—The formal opening of James and Co., Inc., branch store at 526 South Fifth St., took place May 10.

Paul Burgoldt of the St. Louis headquarters, manager of the appliance division, was in the city for the opening and will remain for several weeks. The store will handle a complete line of General Electric appliances for the home.

Plans for the local store call for a gradual increase of space, adding kitchens and room to accommodate home economics classes.

Over $800 worth of merchandise was awarded in connection with the opening of the appliance shop in an essay contest.

ICE-O-MATIC DEALERS MEET IN NEBRASKA

OMAHA—The first sales meeting of Ice-O-Matic dealers in Nebraska territory was held at the auditorium of the Schmoeller & Mueller Piano Co., here May 7. About 150 dealers and salesmen were present, including the managers of the ten branch houses of the piano company.

Representatives from the Williams Oil-O-Matic Heating Corp. at Bloomington, Ill., who spoke were: Stanley C. Bell, sales manager; A. A. Chank; W. T. Kramer and B. H. Miles of the technical division. G. C. May, general manager of Schmoeller & Mueller, stated sales had shown a steady increase.

SCHUMANN & LEAHY ARE NOW LECTRIC-ICE DEALERS

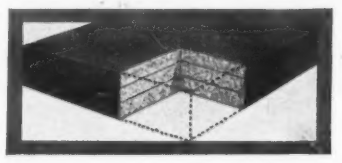
BRIDGEPORT, Conn.—Schumann & Leahy, 2017 Main St., have been named dealer for the Lectric-Ice refrigerator in this city. George Schumann and John Leahy are partners in the concern handling the uniflow product.

NORWALK CO. ORGANIZED

SOUTH NORWALK, Conn. — The Richmond Refrigerating & Supply Co., Brunswick-Kroeschell distributor, has filed organization papers.

Harry Richmond is president and treasurer, and Jessie D. Richmond is secretary.

EFFICIENT

Balsam-Wool  Sealed Slabs

INSULATION

PRACTICAL refrigerator tests—*prove* the unexcelled heat-stopping ability of Balsam-Wool refrigerator insulations. This recognized efficiency, plus the powerful Balsam-Wool advertisements appearing in *The Saturday Evening Post* and other magazines that reach the American *buying* families, has won public confidence in all refrigerators lined with

Balsam-Wool—*true insulation.*

WOOD CONVERSION COMPANY

Mills at Cloquet, Minnesota

Industrial Sales Offices:

CHICAGO, 360 No. Michigan Ave. NEW YORK, 3107 Chanin Bldg. DETROIT, 515 Stephenson Bldg.

Also manufacturers of Balsam-Wool Refrigerator Car and Steel Passenger Car Insulations; Balsam-Wool Insulations for Airplanes and Motor Buses; Balsam-Wool Acoustical Treatments; Balsam-Wool Building Insulation; Nu-Wood, the All-Wood Insulating Board and V-Joint Lath

"EBCO"

AUTOMATIC SELF-CLOSING STREAM CONTROL VALVES

Save Water.

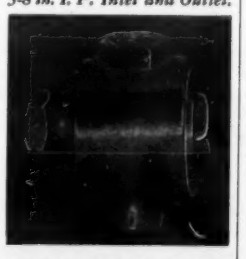
Eliminate Squirting.

Control height of stream—automatically—under all fluctuating pressures between 20 and 120 pounds.

Above—Exposed Type C-1300

The Ebinger Co., pioneered in developing and perfecting the Automatic Stream Control Valve.

Below—Regulator for installation in water supply lines to present fountains 3-8 in. I. P. Inlet and Outlet.



WRITE FOR CATALOG "S"

THE D. A. EBINGER SANITARY MFG. CO.

COLUMBUS, OHIO

Manufacturers of EBCO Drinking Fountains, Ventilated Urinals and Closets, Round Wash Sinks and Steel Compartments for toilet rooms.

Let the Westinghouse Refrigerator increase *your* profits, too!

Sales already beyond original estimates . . . . Future offers wonderful opportunity to dealers who qualify for the Westinghouse Refrigerator Franchise, now! . . . . Here is what it offers:

1. A name (Westinghouse) that means *everything* in electrical appliances, to millions of families.

2. A "Completely Balanced" electric refrigerator. No features over-emphasized for mere spectacular effects on the sales floor—at the expense of reliability, operating cost or long life.

3. Many outstanding engineering improvements, including the exclusive "Automatic Watchman" that prevents a burnt-out motor.

4. Beautiful, custom-styled cabinets, with the lines of fine furniture, and a good-looking, *usable* Buffet Top.

5. A complete range of sizes from 4¼ to 17 cubic feet, priced from $180 up, f. o. b. factory.

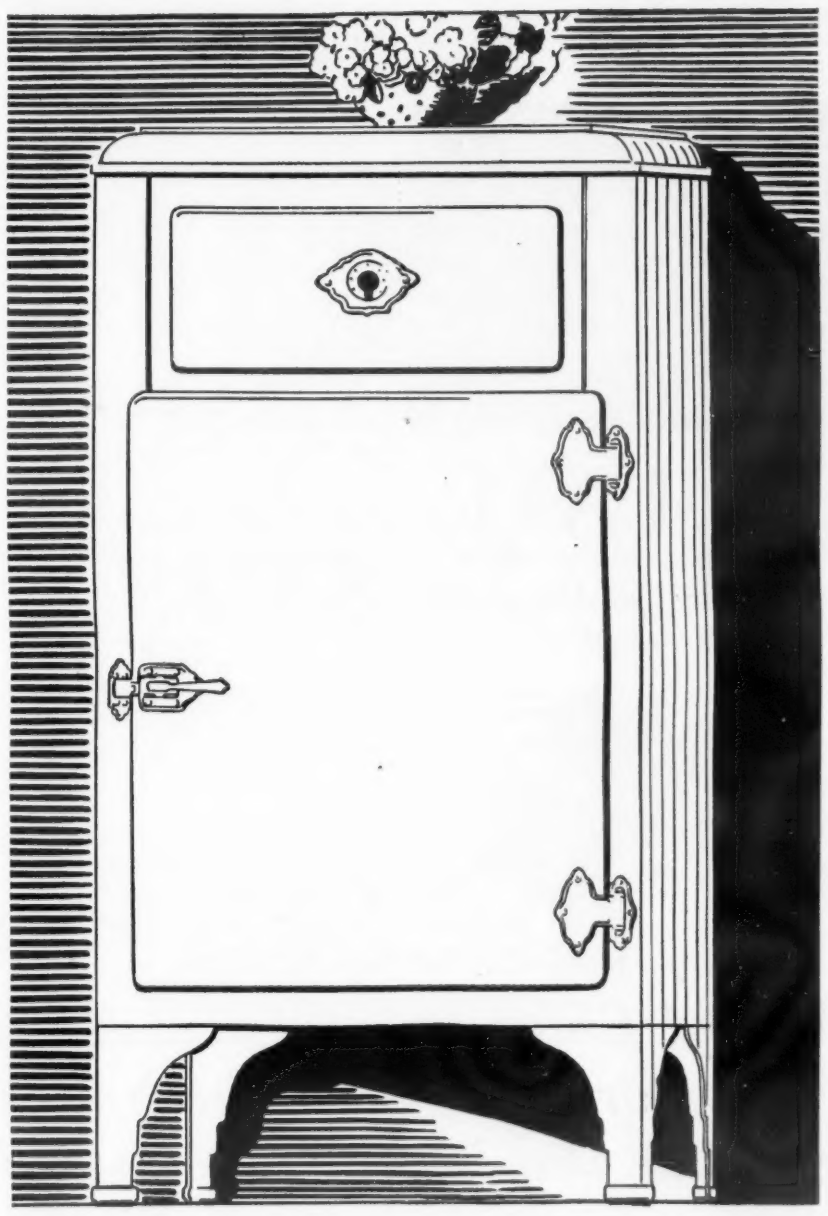
6. An outstanding National Advertising Campaign with complete local tie-up merchandising plans.

7. An improved, horizontal-type, hermetically sealed Quiet Mechanism that has a record of service-free performance unsurpassed in the industry.

8. A complete line of other Westinghouse appliances for the modern electrified home, that offers unlimited possibilities for profitable expansion of your business.

Mail the coupon below or write or wire at once for details of the Westinghouse proposition

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY
Merchandising Department - Mansfield, Ohio



Superbly Styled custom cabinets! Improved horizontal type, forced-draft, hermetically sealed Quiet Mechanism—overhead, yet completely concealed! The Safety-Zone Food Compartment!... and many other scientific contributions to modern refrigeration for the home.

The small family or apartment size. Capacity 4¼ cubic feet. Furnished with vegetable or dry storage drawer bin base, 9½ inches high, at slight extra cost. Steel sub-base 1¼ inches high, optional. Can be built in with kitchen cabinets. Retail price only $180. F.O.B. FACTORY.

$180

Westinghouse

"COMPLETELY BALANCED"

REFRIGERATOR

WESTINGHOUSE *Programs over* KDKA, KYW, WBZ, *and associated stations of the* N. B. C. *chain are helping retailers of* WESTINGHOUSE *products to sell more merchandise. Tune in each Sunday evening.*

A Few Items from the Great WESTINGHOUSE Line

WESTINGHOUSE FLAVOR-ZONE ELECTRIC RANGE

WESTINGHOUSE ELECTRIC VACUUM CLEANER

WESTINGHOUSE MASTER-MATIC ELECTRIC IRON

WESTINGHOUSE DEBON-AIR ELECTRIC FAN

WESTINGHOUSE COLUMETTE RADIO

QUICK ACTION COUPON

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY
Merchandising Department, Mansfield, Ohio

Please send a representative with details of your dealer proposition on refrigerators. Also information on other items checked below.

Name.....

Address.....

City..... *State*.....

☐ RADIO ☐ RANGES ☐ VACUUM CLEANERS ☐ FANS ☐ APPLIANCES

Prospect's Home Is Best Salesroom, Says Radio Speaker

By A. R. Herske*

Sales Promotion Manager, American Radiator & Standard Sanitary Corp.

LET'S look back 25 years ago when the happy young bride went to the general store—bought an oil stove, wash tub, wash board and cooking utensils, rolled up her sleeves and started in housekeeping.

Twenty-five years ago our old friend, the corner grocer, inquired about the family—chased the cat off the counter—weighed ten pounds of sugar—and charged the sale in his book.

Twenty-five years ago the family found its principal amusement in the nickelodeon, its recreation on the front lawn, and its transportation in the horse and buggy.

Then the family went modern. The local gas or electric utility company came to the house, a modern range was installed and the alert, newly arisen appliance dealer brought to the home the electric washer and the vacuum cleaner—the chain store came into being, asked nothing about the family, but displayed its merchandise so attractively that we bought and *paid* for it; the movie palace replaced the nickelodeon, the golf links became the front lawn, and the automobile transformed the county into a neighborhood.

Today, the greatest salesroom is in the purchaser's home. Here, like the great markets of ancient times, gather the merchants of modern times—instead of silks, spices and oils they bring comfort, convenience and health with modern equipment. And the public responds to this new type of selling because people like to buy what they need when this need is brought to their attention.

There may have been a time when the world beat a path to the man who made a better mouse-trap; but today the road must be paved, lighted, and well marked, so the mouse-trap can be brought to the world. Just so, there may have been a time when the heating dealer could sit back and wait for the public to come to him. Today he must bring his service to the public if he expects the public to bring its reward to him.

And with the sales of home equipment made in the salesroom of the home, isn't it true that we in the heating industry have been behind in our methods of selling, even as we are years ahead in the scientific utility of our products? If we knew as much about selling as we do about serving, thousands and thousands of additional home owners would be acquainted today with the story of modern heating.

For years we have simply sought to satisfy the demands of new homes. We have neglected to create business in the old homes. Of course owners of new, up-to-the-minute homes insist upon modern radiator heat, and we supply it because they buy it. But for the 16,000,000 old homes in the United States not equipped with radiator heating, we have done very little. Business from new homes is automatic, but business from old homes is static and that is what we want to cure.

Creative Selling Needed

Creative selling is needed to augment our type of selling, which now only supplies an existing demand.

There may be a mistaken idea in the public's mind that radiator heat for old homes is expensive. They may not know how little it costs to install. The public still uses old-fashioned heating methods because they do not know the advantages of radiator heat, nor the many months they have in which to pay for it conveniently; and all this because we have failed to tell them and sell them the way they want to buy.

Oh, it's true that we've done a great deal of advertising nationally and locally. But we cannot expect advertising to do a selling job, and so it is your opportunity to carry the story of modern radiator heat into the 16,000,000 old homes in America by telling again and again how very little it costs to replace the present old-fashioned heating system. These owners want to save money, they want to be comfortable, they want to protect their health, but, it must be explained to them and they have to be told before they can be sold.

No longer will the old hackneyed sales expressions do, like "Oh, that's a good boiler, see how thick the iron is. I sell a lot of them." Today the public is not interested in what our product is, but in what it does. And that dealer who expects to survive must tell the story of comfort, cleanliness, and economy, and not the story of cast iron.

Some of us have seen this picture, because in only a few months during the latter part of 1930 there were installed in old homes in the United States 34,911 complete American Radiator heating systems; 34,911 homes that for the first time knew the comfort, cleanliness, and low cost of radiator heat.

To the comparatively few who participated in this splendid effort for the home owners of the country, we extend our congratulations and to you we also extend the thanks of those 34,911 home owners who are now enjoying the advantages of radiator heat.

Now, let's be frank. Our industry has been too craft conscious. We have taken a great pride in our mechanical ability and while it is true that we should maintain our present high standard of workmanship, we must remember that pride in performance means nothing when you cannot perform. An installation only follows a sale, therefore heating equipment must be sold before it can be installed.

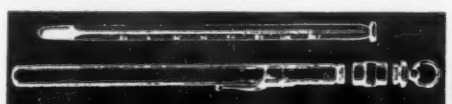
For a great many years the heating contractor has been highly regarded in his community. Yet during the past 25 years changes have meant millions of dollars profit to those industries keen enough to adapt their selling tactics to the changed buying habits of the public.

While you may be the same conscientious, skillful workman you have always been, it will avail you nothing unless you sell that service to the public, and remember you must see them before you can sell them.

And all this is why we are developing and telling the public about a new type of merchandising dealer—the American Qualified Dealer—because after the sale has been made the successful performance of heating products depends upon their proper installation, and this requires the services of a thoroughly trained and competent contractor. We want the public to know these Qualified Dealers, because only in this way can we be assured of satisfied customers and help build up business for the legitimate contractors and for ourselves.

This is the time to stop waiting for phone calls and start making home calls. It isn't a question of whether or not you like this modern method of selling. Today you either have to go out *for* business or go out *of* business. It's personal contact today that gets the contract, so let's quit worrying about meeting competition, and start meeting prospects and remember, it can be done because it has been done.

*Recent address by Mr. Herske over the NBC radio chain.



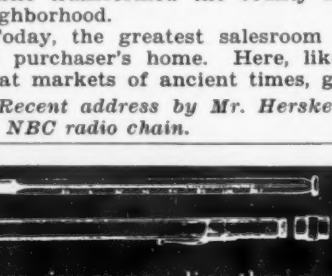
A clear view easy reading thermometer—designed to give the utmost in instrument accuracy and dependability.

Easily interchangeable refill. Nickel plated brass case, not affected by brine.

Carroll Glass Instrument Co.

KULAIR

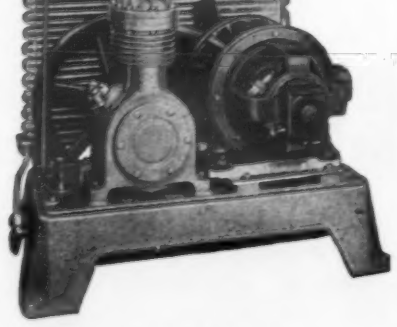
Simplicity, quality, efficiency and capacity unequalled.



A size for every use.

Methyl Chloride or Sulphur Dioxide

Air or Water Cooled CONDENSING UNITS



95 to 2500 Lbs.

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The Important Enhancement

of Dealer and Retail customer confidence in Kulair clientele Allowing Distribution and Sales UNDER PRIVATE BRANDS will benifit your distributing establishment.

KULAIR CORPORATION
PHILADELPHIA, PA.

Boston Edison Increases Refrigerator Display

Larger Edison quarters in Boston for showing four makes of refrigerators.

Sees Need for a New Major Product

"What the world needs today," Carle M. Bigelow, president of Bigelow, Kent, Willard & Co., Inc., Boston, recently told the St. Louis Sales Managers Bureau of the St. Louis Chamber of Commerce, "is another industry like that of the automobile. We need some new product having a far-reaching appeal to the desires of the people. I venture to predict this product will be the building of insulated homes with year-round control of temperature and humidity, properly financed for long-term payment. Many of the great corporations of the country are carrying on research along this line and I venture to predict that during the next one or two decades we shall see at least half of all the American homes rebuilt along the above-mentioned lines, bringing a great employment demand in the manufacture of the materials and equipment for these homes."—Printers' Ink.

NEW EDISON SHOWROOM FEATURES REFRIGERATORS

BOSTON—The new annex building recently constructed for the Edison Electric Illuminating Co. provides considerable space to the sale and display of electric refrigeration.

Increase in the appliance business of this company made the space available in its old quarters wholly inadequate to meet the demand. To meet this demand the new quarters, fronting on Tremont St., one of Boston's largest and busiest retail sections, was constructed.

The Edison Co. has devoted an entire section to the display of electric refrigeration exclusively. Here General Electric, Frigidaire, Kelvinator and Westinghouse refrigerators are on display, giving no special prominence to any one make.

In connection with this department a "Friendly Service Kitchen" is maintained on the second floor, where cookery instruction is given at all times, interspiced with many special events. Cold cookery is one of the features.

A model kitchen is also maintained on the street floor of the main building. The second floor of this building is also devoted to the further display of electric appliances in which the electric refrigerator plays an important part.

The display rooms have marble floors with contrasting Terrazzo color panels. The walls from floor to ceiling are finished with a limestone facing. All doors, grill work and metal trim are in bronze.

KELVINATOR HOLDS DEALER SESSION AT SEATTLE

SEATTLE, Wash.—Some 60 Kelvinator dealers from all parts of the state of Washington participated in a recent convention held at the Washington Hotel by the Standard Furniture Co.

L. B. Wilhelm, manager of the Kelvinator department of the furniture company, presided. Among the speakers were L. Kenneth Schoenfeld, William Sluman, district service manager, and Lawrence Klein, Kelvinator district manager.

Special Notice to Manufacturers

Here is the GYRATORY Compressor they are all talking about!

ABSOLUTELY ELIMINATES FRICTION—*ABSOLUTELY SILENT*

This Amazing New Compressor has only 2 moving parts.

No Pistons—no poppet valves. All internal friction is entirely eliminated. The only compressor built with the International Self-Seating Seal. Long life guaranteed with highest efficiency. The International Gyratory Compressor is fully protected by patents and is a scientific revolution of the refrigeration industry.

Manufacturers and Distributors

Cabinet and other manufacturers and distributors desiring the very latest and most efficient compressor in electric refrigeration—write us for details. We can supply your needs—regardless of whether you want the entire unit including the cabinet, or the compressor only. Exclusive rights granted. Wire or write today.

MAIL THIS COUPON FOR FULL PARTICULARS

International Oil Heating Co., Inc., 3800-10 Park Avenue,
St. Louis, Missouri Dept. RN-3

Gentlemen:

Please send me complete details of your new gyratory compressor. I am interested in compressors only....., complete with cabinets....., high and low sides only.....

Name ..... Date .....

Address ..... State .....

Kitchen Kompact Introduced

For small apartment kitchens a combination unit embodying an Electrolux gas refrigerator has been developed, known as the Kitchen Kompact, the complete unit was first shown by the Brooklyn Gas Co. at the recent Brooklyn Food Show.

The Big Rex Cole Fleet Ready for Action

Part of the fleet of Rex Cole's delivery trucks leaving the Long Island warehouse to make deliveries of General Electric refrigerators in the Metropolitan territory. Placed end to end, these trucks cover several city blocks.

THE EXPANSION VALVE

Stories of Interesting PEOPLE in the Refrigeration Industry

By GEORGE F. TAUBENECK

Occasional items from contributors have been printed in the "Expansion Value" from time to time. We like contributions, and it makes us almost as happy to find a good yarn in the mail as to run across a "hot" front page story.

This section of the "Expansion Value" is being turned over entirely to contributors. On page 12, column 1 of the Engineering section will be found the second installment of this "kolyum." Inasmuch as it is devoted to engineers, the green section was deemed its proper location.

Here come the contributors:

From George Cullen of the Kelvinator Corp., Detroit:

"The old oaken bucket . . . that hung in the well" is still in existence.

To Mrs. Isabel Woodworth Northy came a Kelvinator household model, via the Electric Light & Power Co. of North Abington, Mass. Men from this company came out to her farm home to install the refrigerator, and drank water from the "moss cover'd bucket" which Samuel Woodworth celebrated in persistent stanzas more than a century ago.

Mrs. Northy is a grandniece of the poet. The famous bucket has been in the hands of the Woodworth and Northy families since 1665. Woodworth lived there from 1790 to 1805.

From Innes Harris of Westinghouse Electric & Manufacturing Co., Mansfield, Ohio:

George W. Moister, manager of Westinghouse refrigeration sales promotion, recently left Chicago for Mansfield on the 12:30 a. m. Pennsylvania train.

Early in the morning the porter called him and bade him goodbye at Lima, Ohio, where George had left his automobile.

A few hours later when the train pulled into the station at Mansfield, the porter stepped off the train and handed a traveling bag to George who had appeared on the station platform.

After leaving the train at Lima, George had walked over to the garage, taken his car out and beat the fast Pennsylvania train to Mansfield.

From C. P. Rodman of Omaha:

Who can sell electric refrigerators successfully?

One of the larger gasoline stations of the city has taken on the sale of Kelvinator, while a music house is offering to trade electric refrigerators for pianos.

From music to comfort sounds all right.

From W. Paul Jones, advertising and sales promotion manager of Servel, Inc., Evansville, Ind.:

When H. C. Noll of the H. C. Noll Co., Omaha Servel distributor, wants to contact one of his dealer territories, he merely hops into his trim little cabin Travelaire monoplane, and is off for a 100-mile-an-hour ride to Hastings, Lincoln, or some other of his dealer towns.

Using this most modern of business vehicles for rapid transportation, Mr. Noll says he feels his plane is the greatest asset in his business. He can save enough time to more than pay for the cost of operating his Travelaire, and in addition, gains a great amount of pleasure from his trips, for he likes to fly.

Both Mr. Noll and his wife are licensed pilots, he says. When he is too busy at the headquarters office in Omaha, his wife frequently makes a trip for him.

The ship has dual controls, and they often make their air journeys together, Mrs. Noll flying part of the time while he checks over his morning's mail or other matters he expects to take up with the dealer in the city toward which they are headed.

From Fred H. Russell, Danbury, Conn.:

George Pauli, Jr., manager of the electric refrigeration department of Pauli's store, local Majestic dealer, finished fifteenth in the annual outboard motorboat race on the Hudson River from Albany to New York City.

His time for the 132 miles was four hours and twenty minutes. Mr. Pauli, who is an ardent outboard motor enthusiast, finished sixteenth in the same race a year ago.

From J. C. Beckman of Copeland Sales Co. Inc., Mt. Clemens, Mich.:

Mrs. Irene Stewart, saleslady in the refrigeration department of the E. W. Edwards department store, Syracuse, N. Y., hung up a record for anybody to shoot at when, on the afternoon of April 18th, she personally sold five Copeland electric refrigerators.

Now this piece of fast selling was only part of the story. By looking at the calendar (as I have done) you will see that these refrigerators were sold on Saturday afternoon. When people decide to buy a refrigerator they want it and want it quick. Every refrigerator had to be installed the very following Monday.

Either Mrs. Stewart is a good saleslady, as the foregoing record would indicate, or Mr. Wermuth, the service man, is a gentleman plus and couldn't refuse a lady anything.

By seven o'clock that evening all five refrigerators were placed on the line for testing. They remained in operation until Monday morning when all machines were delivered and installed in the homes of the buyers by noon—and Mr. Wermuth was on his way to more work.

The refrigeration department of the E. W. Edwards department store is under the direction of B. A. Kelly, manager of the department. Mr. Kelly believes thoroughly in the principle that service is an important part of selling.

Another from Fred Russell of Danbury, Conn.:

John Van Benschoten, who first started breaking records in Poughkeepsie, N. Y., away back in the eighties by pedaling an old high wheel bicycle faster than any other local cyclist, is still continuing to set the pace for merchants in record breaking business.

His latest record is that of pushing his Kelvinator sales to more than one a day since the first of the current year.

Announcement of this feat was by Harry Wood, who is in charge of the appliance division of the Van Benschoten business.

From William H. O'Connell, Evansville, Ind.:

Valuable specimens of the carnivora from jungle land, and interesting amphibians from climes afar included in the city-owned Evansville zoo, require consideration in the matter of food quality if they are to thrive in their urban habitat.

Lions and seals, for example, are finicky about their food. It remained for Edward McGinness, sales supervisor of the Southern Indiana Gas and Electric Co., Servel distributor, to solve the problem of keeping in good condition the food selected for these creatures so widely separated as to type and habit.

The new zoo building for primates in Mesker Park, an ornate structure of brick and concrete, now includes a refrigerator room, because of the recent installation of a Servel commercial plant by Mr. McGinness. Meats to meet the healthy appetites of lions, tigers, et al, are preserved at desirable temperatures.

A special compartment in the room takes care of that delectable favorite to seals—frozen fish.

It will be but a short step in the near future to furnish the growing family of bears with a great convenience—nice cold baths when the mercury in the thermometer mounts high and bear spirits lag.

From S. A. Lewis, Los Angeles, California:

Among recent appointments made in the field by Frigidaire in Los Angeles is the naming of Jimmie West, known as the "one-trip" plumber, as Frigidaire representative in Southwest Los Angeles.

This merchant plumber has just opened his new plant at 7526 South Vermont Ave., this city, and is one of the few in the plumbing industry whose name appears on Frigidaire's dealer-list in Southern California.

Besides electric refrigerators Mr. West will also handle G. M. radios and a line of other appliances.

From C. T. Mutchner, Frigidaire Corp., Dayton, Ohio:

In 11 working days the Blackstone Valley Gas and Electric Co. of Pawtucket, R. I., installed 46 new white porcelain Frigidaires in as many homes in Pawtucket and Woonsocket. Fifteen of these installations were made in two days.

The Omel Furniture Co. of Buffalo, N. Y., found its electric refrigeration franchise profitable from the start. The company sold six Frigidaires the first six days it had its franchise.

Electric refrigeration got in the society news with a splash recently when Countess Alice Szechenyi, daughter of the Hungarian Minister to the United States became the bride of Count Bela Hadik, son of Count John Hadik, a former premier of Hungary and now member of the upper house of the Hungarian parliament.

One of the gifts of the bride's father to the pair was a Frigidaire, to be delivered to Washington and then reshipped to Hungary, where they will make their residence.

Miss Kathe Bohn, a graduate of the engineering college of the University of Vienna, spent two days at the Frigidaire plants last week, investigating production methods.

Upon her return to Austria Miss Bohn plans to do educational work in promoting use of electrical equipment in the home.

NOW...

FLEXIBLE RUBBER FREEZING TRAYS ARE NATIONALLY ADVERTISED

•

Every Electric Refrigerator Dealer and Salesman can Cash in on this Advertising

Collier's
THE NATIONAL GEOGRAPHIC MAGAZINE
Town & Country
THE NEW YORKER
THE SPORTSMAN
House & Garden
House
MOTOR BOATING
BELIEVE IT OR NOT ..... By Ripley
HARVEY D GEYER
of Dayton, Ohio
REMOVES FROZEN ICE CUBES FROM A TRAY INSTANTLY WITHOUT MELTING OR PRYING USING HIS FINGERS ONLY!
EXPLANATION OF RIPLEY'S CARTOON BELOW
...ICE TRAYS GO MODERN
Removing ice cubes is no longer a fussy, messy job. A slight pressure "pops" them out of the new flexible rubber freezing trays,—one, two, or a trayful,—instantly from tray to glass.
AS CONVENIENT AS A SELF STARTER
Finger tip pressure ejects the cubes—no longer is it necessary to melt ice cubes into the sink—no need to pound them out and ruin trays and temper.
THEY'RE ECONOMICAL, TOO
Take out only what you need . . . save the rest. The cubes are not partially melted . . . they are colder, larger, dry, clean and sharp-edged. You actually use fewer cubes.
NOW USED BY ALL LEADING MANUFACTURERS
Flexible rubber ice trays are now supplied by all leading automatic refrigerator makers—and these trays are enthusiastically endorsed by household economists.
MAKE YOUR REFRIGERATOR MODERN
An inexpensive flexible rubber ice tray is made to fit every automatic refrigerator—the Quickube Tray for Frigidaire—the DuFlex for General Electric—and the Flexotray for Westinghouse, Kelvinator, Leonard, Electrolux, Servel, Copeland, Universal and others. See your refrigerator dealer or write us direct.
THE INLAND MANUFACTURING COMPANY
Department C, Dayton, Ohio
Flexo Tray
Ice Cubes the Modern Way

The above advertisement is the first of a striking series which will be published in the national magazines pictured on this page. This series—the first ever illustrated by Ripley in conjunction with his famous "Believe It or Not" heading—is a business builder for you. Take advantage of it.

National advertising now adds momentum to a sensational "natural seller"—the flexible rubber freezing tray, the tray that sells on sight. Practically every refrigerator manufacturer in America today supplies flexible freezing trays to distributors and dealers—most manufacturers also use them as original equipment. These trays have achieved international distribution in less than one year.

You, too, can cash in on this great demand. You can sell additional trays with new refrigerators and you can also sell this modern tray to old users. Every mechanical refrigerator salesman should carry them regularly. They help to open doors and attract attention. They make "back calls" easy and profitable. They lead to prospects and refrigerator sales.

For complete information write the manufacturer of the refrigerator you sell, or write us direct.

THE INLAND MANUFACTURING CO.
DAYTON, OHIO

EXPORT INFORMATION ON SALONIKI, GREECE

Cost of Equipment, Electricity Handicaps Sales in Saloniki

By Charles J. Pisar
American Consul, Saloniki, Greece

ALTHOUGH repeated efforts have been made by several American manufacturers of electric refrigeration equipment to enter this market, only one has been recently successful to secure the services of a local agent.

Machinery dealers, dealers in ice-boxes, and furniture dealers, who would be the proper firms to handle refrigeration equipment, hesitate to undertake its distribution.

These firms are of the opinion that in view of the high cost of electric refrigerators as compared with locally made ice-boxes, and because of the existing economic depression, there is little opportunity for the sale of such equipment at the present time.

Electric current is an important item to reckon with on account of its high cost and its limited supply. Some dealers are willing to undertake the sale of electric refrigerators provided manufacturers ship them on a consignment basis, at least during the introductory period.

As electric refrigerators are practically unknown in this market, dealers will not invest money in a product that would require considerable time and effort to introduce. The sales at first would be confined to hotels, cafes, butchers, etc., and such purchasers will demand very liberal credit terms.

The sale of refrigerators for use in private homes also could only be made on long terms of payment, and local dealers are not inclined to invest large sums of capital in an article unless they can be convinced that immediate returns are obtainable.

Another handicap to the marketing of electric refrigeration equipment is the fact that very few, if any, of the local firms possess a technical staff, properly trained for the installation and servicing of such equipment.

Characteristics of Inhabitants

The provinces of Greek Macedonia and Thrace, which comprise the Saloniki consular district, have a population of 1,715,648. Eighty per cent of the inhabitants are Greeks and the remainder Spanish Jews and Moslems.

The Spanish Jews reside principally in Saloniki, and the latter are concentrated in Thrace. Saloniki is the principal city and seaport in this territory. It has a population of 244,680.

Over 90 per cent of all the imports into this district are entered through the port of Saloniki. There are also a number of fairly important smaller cities, namely, Kavalla, Drama, Serres, Komotini, Vodena, Florina, Kozani, Kastoria, Verria and Naoussa, each one of which has a population of less than 50,000.

Many of the inhabitants of Greek Macedonia and Thrace are refugees from Asia Minor who lost most of their belongings during their flight from Turkey and whose present resources are small.

The earning power of these people at the present time is low and will not permit them to enjoy many luxuries. However, they are endeavoring to raise their standard of living and will purchase such articles as will help them to do so in accordance with their present resources.

On account of the unsatisfactory economic conditions and the low standard of living, the price factor plays an important role in the commerce of this territory. Quality is often disregarded and low priced merchandise is given preference. It takes considerable time and effort to introduce high-priced merchandise, notwithstanding its higher quality.

Use of Ice Boxes

The use of ice boxes in the Saloniki consular district is not very extensive and is confined largely to the hotels, cafes, dealers in meat and other perishable provisions. Such users keep ice in their boxes throughout the entire year.

In the central fish market at Saloniki, fish is usually packed in broken ice, especially during the hot season. The use of ice boxes in the private homes is very limited, although it is growing with the improvement in the standard of living. Where ice is used in private homes its consumption is confined to the hot summer season.

Ice is only available in the larger towns in this district. In the smaller towns and villages, food, beverages, etc., are lowered into open wells for the purpose of keeping them cool. This practice is still in vogue in some parts of Saloniki.

There are at the present time five plants producing artificial ice in Saloniki. Four of these plants are operated in conjunction with breweries and cold storage warehouses.

Electric refrigerators for household use are unknown in this district. As far as could be learned, there are two Austrian, one American and one Italian electric refrigerators in use in Saloniki. The latter one is installed in one of the large hotels.

Domestic Manufacture of Ice Boxes

There are several small manufacturers of ice boxes for household and other use in Saloniki. These manufacturers make a simple, low priced refrigerator which is within the reach of the local inhabitants, and which sells considerably below the cost of imported ones. Sawdust is used for insulating the domestic made boxes.

Austrian and Yugoslav boxes of simple construction for household use are imported into this district. The number, however, is small.

Small domestic made refrigerators for household use are sold in Saloniki at $10.00 to $20.00, United States currency.

Electric Current Supply

For some time past the city of Saloniki has been faced with inadequate electric lighting facilities. The population of the city has increased considerably in the last eight years, due to the arrival of a large number of refugees from Asia Minor.

During this period little has been done to provide additional current. A Belgian company owns the concession for the supply of electric current in Saloniki. An agreement was entered into early this year between this company and the Greek government prolonging the concession and providing for an adequate supply of electric current and the extension of the present street car system in this city.

Hydraulic power available at a small distance from Saloniki will be used for the purpose. However, this agreement has not yet been ratified, pending the study of proposals made by various foreign groups for the harnessing of all the waterfalls in Macedonia.

At any rate, the contemplated works cannot be completed for two or three years, and in the meantime the company accepts no new subscribers and at times, together with local authorities, enforces regulations stipulating a limited consumption of current.

All the electric current supplied in this district is direct. Current is available in the interior cities of Verria, Naoussa, Edessa, Florina, and Grevena in western Macedonia; Serres, Drama, and Kavalla in eastern Macedonia; Alexandropolis, Xanthi, Komotini and Dimotika in western Thrace, and a few less important centers.

All the plants in the interior are of recent installation. The first one erected dates from 1918 with the exception of one at Saloniki which was built in 1906.

A current of 110 and 220 volts is supplied for lighting. The Saloniki plant, which is the most important, provides a current of 220 volts for lighting and household use. Current of a higher voltage is available for industrial purposes.

The current obtainable in Saloniki is relatively expensive and with taxes included, costs 5.50 drachmas per kilowatt hour. (One drachma is equivalent to 1.29 cents United States currency). Meters installed in the homes are from 5 to 20 emperes, and rarely 30 amperes, which hinders the consumption of a large amount of current in the individual homes under the present equipment.

Quoting Prices

In quoting prices, C. I. F. quotations at the port of destination of the merchandise should be given. F. O. B. prices at the port of shipment are sometimes acceptable when the exporter can give the ocean freight and insurance rates to the purchaser in order that the latter may readily ascertain the cost of the goods at the port of destination. F. O. B. factory prices should never be quoted.

Customs Duties

The duty assessment on foreign products imported into Greece is entirely dependent upon the interpretation of their classification under the Greek tariff by the Hellenic customs officials. Exact information cannot, therefore, be given, but it is believed that refrigeration products, as near as can be ascertained from the information available, would probably be classified under the following item and if accompanied by a proper certified invoice, would accordingly be subject to the duties indicated.

	Gold Drachmas per 100 kilos Maximum	Minimum
50 m. Trunks, simple or covered with fabrics of hemp, flax, cotton, iron and tin sheets, household refrigerators and ice boxes even with metal parts	40	50

For the purpose of computing the duty one gold drachma is equivalent to 15 paper drachmas, the currency in circulation. One paper drachma is worth approximately $0.0129 United States currency at the present rate of exchange.

In addition to the foregoing, a surtax in the amount of 75 per cent of the corresponding import duty, is levied to cover municipal, forced loan, port, statistics, philanthropic and other assessments.

Certificate of Origin

In order that the minimum duty be assessed on merchandise of American origin, a statement should appear in the invoice showing that the goods mentioned therein are the produce of the United States.

This statement should be certified by the Chamber of Commerce of any large city in the United States, the customs official at the port of shipment, or the nearest Greek consular officer.

If a separate certificate of origin is submitted it should contain a statement of (1) the marks on the packages, (2) number of packages, (3) description of the goods, (4) gross and net weights, (5) name of shipper, (6) name of consignee, (7) name of steamer, (8) date of shipment, and a statement to the effect that "The goods described hereabove are of United States of America origin, manufactured at ..... (place of manufacture)."

Saloniki Trade Fair

During the month of September of each year an international trade fair is held in Saloniki. This fair has the support of the leading commercial organizations in Greece, as well as the Hellenic government.

Visitors come to this fair from Greek Macedonia and Thrace and other parts of Greece and from nearby Balkan countries. This fair provides a suitable means for giving publicity to products introduced into Greece for the first time, and is recognized as an excellent advertising medium.

Full information concerning space, etc., may be obtained from the Director, International Trade Fair, Saloniki, Greece.

List of machinery dealers in Saloniki, Greece: M. K. Stamatopoulos & Fils, corner Leontos Sofou and Frangon; G. Gregoriades Brothers, 13 Odos Salaminos; Papatsas Freres, 2 Odos Frangon; Constantinos Melfos, 5 Odos Antigonidon; Glavanis & Kazazis, corner Megalou Alexandrou and Ermou Sts.; W. Smithson & Co., corner Tsimiski and Komninon Sts.; D. Avrassoglou, 14 Leontos Sofou St.; J. Levendakis & Co., 23 Odos Pantazidou; C. M. Petrides & Co., 10 Rue Pantazidou; D. Katsoulis & A. Karpos, 5 Odos Tsimiski; I. Sarakakis & I. Calomiros & Co., Stoa Iris, Odos Rongoti; Tiano Freres, 36 Odos Olympiou Diamanti.

Importers and dealers in electrical supplies in Saloniki, Greece: Alex. Zachariou & Co., corner Tsimiski & Komninon Sts.; Victor Yacoel, 24 Odos Tsimiski; Sam Saporta, 9 Odos Komninon; Thomas Lotsopoulos, 27 Odos Komninon; G. K. Saliaris & A. F. Haritou, 30 Odos Tsimiski; K. Korovilos, 9 Odos Pantazidou; D. Theodorides, Megaron Pantazidou, Odos Katouni; Nicolas Vergiades, 25 Dragoumis-Tsimiski; Marius Papaioannou, 95 Odos Tsimiski.

Dealers in ice boxes in Saloniki, Greece: Petros Nedou, Odos Frangon; Abram Nathan, 17 Tsimiski St.; Fils de Sam Nahmias, Metropoleos St.; Revah, Levy & Co., Rue Venizelos 22.

No responsibility is assumed as to the business standing of the persons or firms named above. Credit information can be had from American banks specializing in foreign business, or from commercial reporting agencies.

These names have been furnished by the American Consul at Saloniki, Greece. American consular officers at any foreign city will furnish such names directly to any American firm or individual upon request.

Area—Topography—Climate

The provinces of Greek Macedonia and Thrace, which comprise the Saloniki consular district, have an area of 19,500 square miles. This is approximately equivalent to the combined area of the states of New Hampshire and Vermont. To the west lies Albania; to the north Yugoslavia and Bulgaria; to the east Turkey; and to the south, the Aegean Sea and the Greek provinces of Yanina and Tricala.

The southern and eastern parts of Greek Macedonia and Thrace are low lying plains, and the northern and western parts are mountainous. Several large unnavigable rivers traverse the plains.

The climate of Greek Macedonia and Thrace is as varied as its physical features. The summers are hot and the winters mild in the coastal plains. In the mountainous parts the winters are cold. The rainfall is moderate.

Population—Language

The population of Greek Macedonia and Thrace is 1,715,648, chiefly Greeks. There are also many Spanish Jews and Bulgarians. Formerly about 500,000 Turkish Moslems resided in this district. Over 80 per cent of these people were sent to Turkey in exchange for Greeks who formerly resided there. The remainder are concentrated in Thrace.

The languages spoken are modern Greek, Bulgarian, and Judeo-Spanish. Turkish is spoken in Thrace. French is extensively employed in commerce.

The standard of living in the cities is fairly high, while in the rural areas it is low. The depreciation of the currency has materially reduced the buying power of the people.

The cultivation of tobacco is the most important agricultural industry in Greek Macedonia and Thrace. Nearly 120,000 acres are planted with this crop each year, the annual production under normal conditions amounting to about 80,000,000 pounds.

Over 80 per cent of the leaf tobacco produced is exported, chiefly to the United States, Germany and Italy. The United States buys the highest grade of Greek tobacco. In 1929, 12,740,315 pounds of tobacco, valued at $9,438,240, and in 1930, 11,015,934 pounds, valued at $6,533,488, were shipped to the United States.

Other crops are wheat, corn, barley, rye, oats, cotton, beans and paprika. Silk worm rearing is also an important industry.

The manufacturing industries in this consular district are confined to the production of cotton yarns and textiles, oriental carpets, building materials, foodstuffs, soap, leather and paper products, cigarettes and various mechanical appliances.

With the exception of the carpet factories, the output of the industries is chiefly consumed in the domestic market. Small quantities of cotton yarn, soap and cigarettes are exported to nearby countries.

A variety of minerals are found but only lignite, iron pyrites, magnesite and zinc are produced in any appreciable quantities.

Imports and Exports

The imports into Greek Macedonia and Thrace in 1929, were valued at $39,906,000. The principal items usually imported are cattle and sheep, dairy products, oleo-oil, flour, wheat, rice, dry vegetables, coffee, raw cotton, cottonseed oil, cotton textiles and yarns, lumber, iron and steel, hardware, cement, leather, paper, petroleum products and automobiles. The principal imports from the United States are wheat, flour, oleo-oil, automobiles, leather, cotton textiles, etc.

The exports from this consular district in 1929 were valued at $42,919,000, and consisted chiefly of tobacco, cocoons, wool, sheep and goat skins, furskins, cotton yarns, oriental carpets, magnesite, etc.

The exports to the United States in 1929 were valued at $10,399,996, and in 1930, at $7,420,812, and consisted chiefly of tobacco, sheep and goat skins, furskins, cheese, carpets, magnesite and chrome ore. The chrome ore is of Yugoslav origin.

Postal Rates—Currency

The postal rate on letters from the United States is 5 cents for the first ounce and 3 cents for each additional ounce. There is a parcel post service between the United States and Greece. The limit for parcels is 22 pounds, and the rate is 12 cents a pound.

Greek currency was stabilized in 1928 at the rate of 375 drachmas to the pound sterling, equivalent to 77 drachmas to the dollar. On January 1, 1931, the drachma was quoted at 1.2955 cents United States currency. Sales should be made in dollars, or pounds sterling.

The metric system of weights and measures is used extensively and is thoroughly understood in foreign trade. Certain local weights and measures, such as the oke (2.82 pounds), and the pic (26.96 inches), are employed in domestic commerce.

Banking Facilities—Credit Terms

There are no branches of American banks established in Saloniki. There are several Greek and other banking institutions which have branches in the United States or maintain relations with American banks.

These include the Banque Nationale de Grece, the Banque d'Athenes, the Commercial Bank of Greece, Banque d'Orient, Banque Amar, Banque Union (Greek), the Ionian Bank, Ltd., (British), the Banque Ottomane and the Banque de Salonique (French).

The usual terms which responsible firms in this consular district desire are acceptances payable at 30, 60 or 90 days. Some European manufacturers grant longer terms. American manufacturers are advised to exercise caution in extending credit to any firms except those of unquestionable standing. There are no American mercantile or collection agencies in Greek Macedonia or Thrace.

Packing

Merchandise intended for this consular district should be securely packed and crated to withstand the roughest kind of handling and as a precaution against pilferage. As a further precaution, packages should be marked in such a manner as to give no indication of their contents.

Shipping Communications

The American Export Lines (Export Steamship Corp.), 25 Broadway, New York, maintains a regular service of steamers under the American flag between American and Greek ports. These vessels carry passengers. There are also several lines of other nationalities maintaining regular services between the United States and Greece. First-class mails from and to the United States are usually despatched via Cherbourg, the time involved being about 10 to 12 days. Paris and London can be reached from Saloniki in 2½ and 3 days, respectively.

Customs Tariff

The customs tariff in Greece is levied chiefly for revenue purposes and is relatively high. In addition to the ordinary customs rates, various surtaxes, aggregating 75 o|o of the customs duty, are levied. There are ad valorem and specific duties. In most instances, the duty is levied on the weight of the merchandise usually including the weight of the immediate container.

There are maximum and minimum rates, the latter being applicable to the merchandise imported from countries enjoying most favored nation treatment. Imports from the United States enjoy the lower rates, provided they are accompanied by certificates of origin, certified by a Greek consular officer, a chamber of commerce, or the customs official at the port of shipment.

Ports—Customs Free Zones at Saloniki

The principal sea ports in Greek Macedonia and Thrace are Saloniki, Kavalla and Alexandropolis (formerly Dedeagatch.) The bulk of the imports into this district enter through the port of Saloniki, but over one-half of the exports, consisting chiefly of tobacco, are shipped through the port of Kavalla.

Saloniki is also an important port for the Central Balkan states. There is a Greek free zone at Saloniki through which the products destined to and from Balkan states can pass without being subject to the Greek customs. Repacking, grading and mounting of merchandise, but no manufacturing, is permitted in the free zone.

Yugoslavia also has a free zone at Saloniki for its foreign trade which is free from Greek customs control.

Catalogues

Manufacturers and exporters interested in this market are invited to supply this consulate with their catalogues and price lists which will be placed on file for the use of local merchants.

BOHN PIONEERED
THE PORCELAIN
REFRIGERATOR

This is but one of the many advances pioneered by the BOHN engineers during thirty-five years of quality manufacturing.

BOHN has built thousands of cabinets for manufacturers of refrigerating machines who desired the utmost in beautiful and scientific construction to best set forth their mechanism.

BOHN would be glad to figure with those organizations who recognize that a quality all-porcelain refrigerator is a distinct merchandising asset.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Write for details of low prices now prevailing on stock models.

MARKETING PRESENTS PROBLEM IN CANADA

By D. H. Pollitt
President, Norge Corp. of Canada, Ltd.
Toronto, Ontario

THE situation confronting the American manufacturer who seeks to capture a share of the Canadian market is not the same as it was 10 years ago, or even a year ago. In recent months distinct changes have taken place, principally due to the activities of the new federal government now in power.

Canada has been affected, as most countries have, by the world-wide depression. Except for the rural population, however, which is at present suffering unusual hardships owing to the world wheat situation, Canada is more fortunate than most nations in the extent and intensity of its depressed conditions.

Even these conditions are prevalently regarded as being temporary, and have little permanent bearing on the plans of an American manufacturer who is thinking of invading the Canadian market.

Of much more significance to outsiders are the definitely changed conditions, the effects of which will undoubtedly be permanent, brought about by the recent induction of a high-tariff, Conservative party in the Dominion legislature.

Canada's tremendous area, almost a fifth larger than that of the United States, sparsely settled with little more than nine million people, creates a merchandising problem that is peculiar to itself, and probably more difficult and expensive to surmount than is the case anywhere else in the two Americas.

Distribution facilities are not so readily available, and in many instances distributors, both wholesale and retail, are not as well organized and experienced in modern methods.

Selling and advertising costs are higher, owing to the immense distances to be combed for a relatively small sales response.

Moreover, in a market less populous than the single state of New York, the Canadian merchandiser must adjust his plans to a wide variety of geographic conditions and huge natural barriers plus the difficulties presented by racial divisions and the psychological effects of divergent speech and creeds.

Nearly a third of the population is of French origin, which means not merely a translation problem for a firm's advertising department, but a sharp division of the total market insofar as potential demand and distributive contacts are concerned.

Another sharp division which bisects the racial split is that of occupation. Practically a third of the population live in rural districts and are engaged solely in agricultural pursuits.

Their needs, habits, earning power, and even their vocabulary are markedly different from the people who live in the six cities of more than 100,000 population.

Geographically, the Canadian market breaks up into five quite distinct zones, where weather conditions, occupations, habits, speech, and creeds of wide variance produce a singularly unhomogeneous nation.

The Pacific zone, cut off from the rest of Canada by more than a day's train journey through the Rockies, supports a population that concentrates on its own special advantages of climate and position in relation to oriental and world trade.

In recent years, and especially since the opening of the Panama canal, the people of British Columbia have been obsessed with the development of Vancouver as a world port. Lumbering, fishing, fruit-growing and canning, are the chief industries.

The prairie zone, cut off on the one side by the mountains and on the other by more than 700 miles of barren, rocky wilderness along the northern shores of the Great Lakes, is devoted almost entirely to agriculture, although there is a rapidly developing mining industry in the northern sections of the three provinces that comprise this zone, and in Winnipeg there has been a great increase in manufacturing.

The building of the Hudson's Bay Railway, providing this section with a new world outlet, will, if anything, still further isolate the interests of the prairie population.

The Ontario zone, comprised of only one province, yet representing practically a third of the population and wealth of the Dominion, is more urban in settlement and industrial in occupation.

Its people are more homogeneous, and because of frequent interchange of traffic with the United States, this province presents fewer points of difference with an American audience.

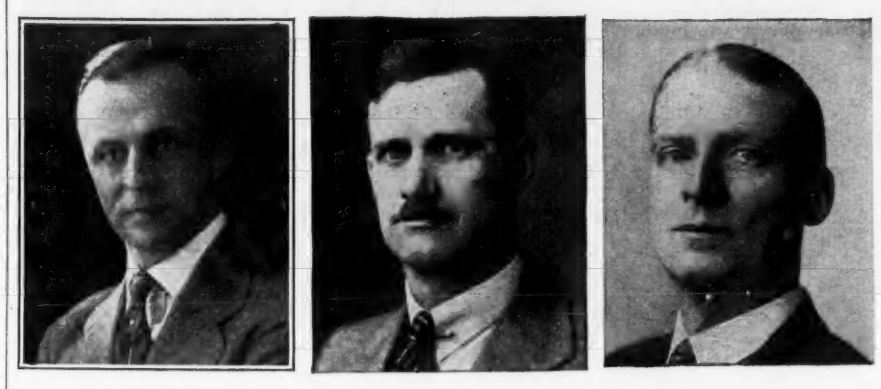
The Quebec zone is again a single province, but it differs vastly from Ontario. It contains, on the one hand, Canada's most populated city, Montreal, yet, has no such densely settled industrial regions as surround Toronto. It is in Quebec that the great majority of Canada's French population resides, and of these the majority are "habitants" living on tiny farms.

Salesmen who speak French and translations of English advertising are essential to the capture of this section of the Canadian market.

The maritime zone, consisting of three provinces on the Atlantic seaboard, is more like Ontario in the homogeneity of its population, but more like British Columbia in its occupations.

Through years of contact with the New England states the people of Canada's maritime provinces are more sympathetic with American products, ideas and methods, and present less of a problem to the American merchandiser.

Vimy Officials Mix Radio, Refrigeration



H. C. Lewis J. W. Askham W. J. Whitten

Toronto Radio Co. Takes Franchise

TORONTO, Ont.—Vimy Supply, Ltd., Canadian distributing organization has been named distributor of Copeland refrigerators by the H. M. Robbins Co. of Detroit, export representative.

Fourteen years ago this company was founded by J. W. Askham and W. J. Whitten. Shortly afterward, H. C. Lewis joined them in distributing Mohawk radios throughout Canada.

Mr. Askham is president of the company, with Whitten as vice president and Lewis as secretary, treasurer and general manager.

After the merger of the Mohawk Corp. of Illinois with the All-American Corp., the Vimy company took over manufacturing of Lyric radios under license granted to the Mohawk Radio, Ltd.

Under the leadership of General Manager Lewis, the Vimy sales staff recently made a trip to Mt. Clemens, Mich., and spent two days inspecting the Copeland plant and studying the product.

OMAHA FRIGIDAIRE COMPANY OPENS QUARTERS

OMAHA—General Radio and Refrigeration Co., the newly organized retail sales outlet for Frigidaire, held its formal opening recently. More than 500 people visited the sales room on that day.

A half-gallon glass water bottle was given to the first 100 persons who called on the opening day. Five sales were recorded for the day, according to J. M. Murphy, who has just been appointed sales manager for the cities of Omaha, Lincoln and Council Bluffs.

The Covenant hospital here, now the second in size in the city, has just completed an addition of 85 rooms. The ammonia plant has been replaced by Frigidaires, which were placed in all the diet kitchens. One large room fitted for storage of foods, an 18-ft. service box, a 400-lb. ice maker and water cooler. were included in the order. The contract called for an outlay of $5,000. The contract called for an outlay of $5,000.

SEATTLE CO. PARTICIPATES IN PROSPERITY CONTEST

SEATTLE, Wash.—The Washington Home Equipment Co., distributor of Apex refrigerators, is participating in a "prosperity queen" contest inaugurated by Seattle merchants.

This contest to stimulate sales, offers about 60 prizes, with a grand award of a new Studebaker sedan, to the woman crowned as the queen.

The electric refrigerator company, in line with other merchants, will give prosperity votes at the rate of one vote for each one cent of sales represented.

TIME PAYMENTS NOT GUILTY, SAYS HANCH

DETROIT—Attributing business depressions to installment buying and the extended use of consumer credit is entirely unwarranted, according to C. C. Hanch, general manager of the National Association of Finance Companies.

Hanch announces that a study of the relationship between installment selling and prosperity and depressions has just been made by Milan V. Ayres, analyst for the association.

"Authors of such statements," maintains Hanch, "ignore the fact that since 1907 our population has increased 39 per cent, money in circulation has increased 107 per cent, deposits in national banks 335 per cent, and government expenditures 457 per cent, and that many important economic changes have occurred, including the establishment of the Federal Reserve System.

"It is illogical to attribute the belated recovery to one factor. Moreover, installment selling had a firm hold on the nation prior to 1907. Furniture, pianos, sewing machines and farm machinery were all sold on consumer credit before that time.

"Many exaggerated statements have been made as to the approximate installment debt in 1929 for each family in the country. Some have gone so far as to place it as high as $250. Mr. Ayres estimates, after a careful study of the situation, that the total volume of retail installment sales for 1929 were about $6,000,000,000.

"The volume of installment sales in a year must not be confused with the outstanding installment debt at the end of the year," Hanch continues. "About one-quarter of this $6,000,000,000 is a down-payment. The average installment contract pays out in less than a year and, therefore, at the end of the year, the outstanding installment debt is less than one-half the deferred portion of the price of the installment goods sold during the year.

"The result is that those outstanding amount to about one-third of the annual volume of installment sales. At the end of 1929 the American people owed something near $2,000,000,000 on installment purchases; dividing this among 29,000,000,000 families, the debt per family was about $69, according to Mr. Ayres' figures.

"The idea that people buy on the installment plan when times are bad and therefore contribute to the total debt is thoroughly disproved by the fact that people are much less inclined to buy on installments during a depression than in times of prosperity.

"A buyers' strike affects installment buying just as much as it does cash purchases," he concludes.

Exports of Refrigerators

February Shipments Reported by the Bureau of Foreign and Domestic Commerce

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators
	Number	Value	Number	Value	Value
Austria	27	$ 3,975	...	...	$ 471
Azores and Madeira Islands	5	1,516	...	...	65
Belgium	42	6,717	39	$ 5,059	4,757
Czechoslovakia	...	...	...	...	8,103
Denmark	17	2,209	23	2,042	1,959
France	624	63,864	31	4,775	6,364
Germany	116	3,927	35	4,905	12,615
Greece	...	...	...	...	220
Irish Free State	29	4,383	...	...	1,659
Italy	30	3,173	...	...	4,242
Netherlands	40	4,208	12	1,753	4,620
Norway	13	1,439	...	...	257
Poland and Danzig	2	273	...	...	...
Portugal	6	1,515	...	...	...
Spain	6	1,672	8	1,123	4,016
Sweden	56	5,539	...	...	2,789
Switzerland	154	19,289	38	4,375	4,579
United Kingdom	408	70,736	3	5,479	43,870
Canada	857	87,655	201	29,288	28,606
British Honduras	3	329	...	...	33
Costa Rica	3	457	1	95	...
Honduras	1	366	...	...	227
Nicaragua	...	...	...	...	100
Panama	27	5,452	...	...	374
Salvador	7	1,488	...	...	116
Mexico	74	12,219	6	931	2,951
Bermudas	4	750	...	...	41
Barbados	4	577	...	...	...
Jamaica	7	2,065	...	...	27
Trinidad and Tobago	1	116	...	...	24
Other British West Indies	1	300	...	...	20
Cuba	7	847	9	1,768	4,203
Dominican Republic	2	604	...	...	250
Netherland West Indies	1	124	1	158	150
French West Indies	...	...	...	...	105
Haiti, Republic of	18	2,844	...	...	69
Argentina	32	3,986	2	598	8,169
Bolivia	1	97	...	...	...
Brazil	473	59,731	15	7,372	2,459
Chile	5	588	...	...	984
Colombia	79	11,014	...	...	558
Ecuador	1	120	...	...	236
Peru	2	257	3	765	...
Uruguay	...	...	...	...	470
Venezuela	86	12,300	5	2,182	2,936
Aden	1	164	...	...	...
Arabia	...	...	...	...	59
British India	33	4,948	19	2,631	1,279
British Malaya	8	1,250	...	...	378
Ceylon	15	2,208	5	661	1,532
China	35	9,637	...	...	583
Java and Madura	11	1,001	...	...	277
Other Netherland East Indies	...	...	...	...	65
French Indo-China	...	...	2	527	156
Hong Kong	1	120	...	...	5,874
Japan	168	29,046	63	12,685	3,095
Kwantung	...	...	...	...	105
Philippine Islands	184	34,680	6	4,222	977
Australia	...	...	...	...	115
British Oceania	4	663	...	...	145
New Zealand	7	1,006	...	...	1,265
British East Africa	...	...	2	395	762
Union of South Africa	293	40,256	...	...	2,548
Gold Coast	4	519	...	...	199
Nigeria	20	2,362	...	...	...
Other British West Africa	...	...	...	...	447
Egypt	10	1,838	2	786	271
Algeria and Tunisia	29	2,698	...	...	66
Other French Africa	5	1,227	...	...	395
Liberia	...	...	...	...	364
Morocco	2	393	9	1,440	951
Mozambique	1	162	...	...	179
Canary Islands	10	2,301	...	...	141
Total	4,112	$535,200	540	$ 96,015	$175,922
Shipments to Hawaii	54	8,489	3	1,431	2,536
Porto Rico	41	7,209	3	1,595	441

DOLISON REPORTS INCREASED FOREIGN DEMAND

DETROIT—Interest in beverage cooling equipment in foreign countries is increasing, according to D. H. Dolison, sales manager of Liquid Cooler Corp.

"This interest," he said, "follows the wide acceptance of American made electric refrigeration in many parts of the world. In one week we shipped Temprite beverage coolers to Spain, Belgium and Cuba."

PITT PROFESSOR CONDUCTS MAJESTIC SCHOOLS

PITTSBURGH—Refrigeration schools of Hamburg Brothers, distributor of Majestic radios and refrigerators in this city, are now being conducted by Frank H. Stiening, assistant professor of mechanical engineering in charge of household refrigeration at the University of Pittsburgh.

GEMCO RADIO STORES NOW FRIGIDAIRE DEALERS

BUFFALO — National Refrigeration Corp., distributor, announces that the Gemco Radio Stores at 499 Elmwood Ave. and 1437 Hertel Ave., are now handling Frigidaire equipment.

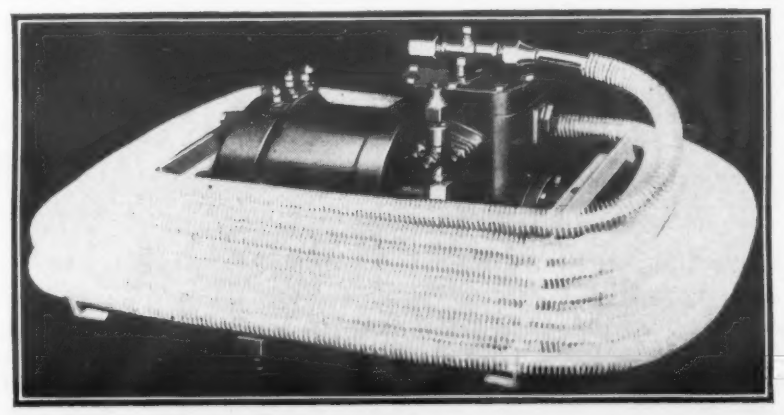
Low Priced Sealed Unit

NO SHAFT SEAL—NO BELT

100% BY-PASS UNLOADING

FOR ANY MAKE CABINET

READ SPECIFICATIONS BELOW



SULPHUR DIOXIDE REFRIGERANT

—MOTOR—

H. P.	⅛
Volts	110
Speed (full load)	1,740
Amps (run)	2.36

—COMPRESSOR—

No. of Pistons	2
Bore	.75
Stroke	.75
B. T. U. 24 Hrs., 20 Deg. Coil 80 Deg. Room Extremely Quiet	13,200

—HOT ROOM TEST—

Room Tem. Far. Deg.	112
Suction Press. Lbs.	89
Discharge Press. Lbs.	89

Motor starts with above balanced pressures without noticeable effort. Suction and discharge pressures do not effect motor starting with new unloading device. Weight 70 Lbs.

We are preparing to manufacture these domestic units on large contract orders to fit your specific requirements or we will sell entire output on contract to a well financed organization.

IcELECT REFRIGERATION CORPORATION

OMAHA, NEBR.

ICE-O-MATIC DEALERS INSPECT NEW MODEL

ST. LOUIS, Mo. (UTPS)—Brown & Hall Supply Co., distributor in the St. Louis territory for Williams Ice-O-Matic, were hosts to Ice-O-Matic dealers, and those who contemplate handling the line, at a dinner at Hotel Chase on May 14.

Chief Engineer Miles of the Williams factory, and Mr. Shank of the sales department were present. The new P-6-X DeLuxe cabinet just brought out by Williams was introduced.

At present the St. Louis dealers of the company are: Alderson Radio Co., 2546 N. Grand; Baker Electric Co., 8204 Gravois; Bigalte Elec. Co., 4545 Gravois; Deeken Music Co., 2017 E. Grand; Gaertner Elec. Co., 3521 N. Grand; E. Jepsen Elec. Co., 115 N. Kirkwood, Kirkwood, Mo.; Lehman Hdwe. Co., Clayton & Tamm; Radio Sales Co., 1025 N. Grand; Show Boat Radio Store, 3004 S. Jefferson; J. C. Schmitt Music Co., 3749 S. Jefferson, and Albers Radio Co., 12 N. Meramec, Clayton, Mo.

Missouri dealers are: J. L. Crum, Columbia, Mo.; G. C. Eberlin, Hermann, Mo.; J. E. Gilleland, New Cambria, Mo.; J. H. Kormeier, Owensville, Mo.; L. J. Portell, Festus, Mo.; L. J. Scholten, Rhineland, Mo.; and John Schulze Plbg. Co., St. Charles, Mo.

Illinois dealers are: Community Oil Burner Co., Belleville, Ill.; Community Oil Burner Co., East St. Louis, Ill.; Ernst Elec. Co., Alton, Ill.; Halliday Rittenhouse Co., Cairo, Ill.; Weilbacher & Sons, Columbia, Ill.; F. G. Hempe Radio Co., 368 S. 10th St., East St. Louis. Ill.; Morgan & Sons, Springfield, Ill.; Snapp Elec. Co., Chester, Ill.; E. F. Wieldt, Mt. Vernon, Ill.

CLEVELAND COMPANY TO MAKE VACUUM CLEANERS

CLEVELAND — The White Sewing Machine Corp. has signed a contract to manufacture vacuum cleaners for Electrolux, Inc. of New York City.

Formerly the Electrolux cleaners sold in the U. S. were manufactured at the company's plant in Stockholm, Sweden.

The vacuum cleaners, it was stated, will not be merchandised as companion merchandise to the Electrolux gas refrigerator, which is manufactured by Servel, Inc., as no connections exist between the two companies.

All patent and manufacturing rights for the Electrolux refrigerator in the United States and Canada were acquired some time ago by Servel, Inc., from the Swedish parent company of Electrolux, Inc.

BROOKLYN CO. ENTERTAINS GROUP OF DEALERS

BROOKLYN—Julien Loeb, president of the Specialty Service Corp., Majestic distributor, recently entertained a group of refrigerator dealers at the Food Craft Shop in Brooklyn, where the company has a permanent exhibit of Majestic refrigerators.

This was the first of a series of informal gatherings that Mr. Loeb has planned for his dealers this season. Bob Hendrickson, refrigerator sales manager, addressed the guests.

NORWICH COMPANY FORMED

NORWICH, Conn.—The Electrical Refrigerating Co., Inc., has been formed to manufacture electric refrigerating equipment. The incorporators, all of Norwich, are: Joseph O. Hull, Jacob Gallup, Jr., and Lucy L. Hull.

Selling on the Curb

In making apartment house installations, the Elin Co., Westinghouse refrigerator distributor for New Jersey, have found it advisable to have 2 or 3 salesmen on the job, reports Douglas Lenfesty, sales promotion manager. When the refrigerators are all lined up before the apartment, crowds are attracted and prospects are secured. The picture shows the installation of 25 refrigerators by the company at 982 Grove St., Irvington, N. J. Three salesmen who were on the job secured a number of prospects.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Dayton

Three models of electric refrigerators comprising the line offered by the Dayton Refrigerator Co., Dayton, Ohio, are discussed in a folder. These models, of 4, 5 and 7 cu. ft. capacity, have Dry-Zero insulation. A 5-stage temperature regulator is standard equipment on all models.

International Freezer

Three models of brine ice cream freezers are illustrated and described in a folder prepared by the International Freezer Corp., 51 Madison Ave., New York City. All of the models have capacities for 20 quarts of ice cream.

Seeger

Domestic cabinets comprising the Seeger residence and apartment house lines are illustrated in Catalog No. 52 recently prepared by the Seeger Refrigerator Co. of St. Paul, Minn. De Luxe models, Standard all-porcelain line models and Lacquer line models are described in the section devoted to residence cabinets. Apartment models are offered in all-porcelain and lacquer and porcelain. Special cabinets, including an all-porcelain ice maker, are also mentioned in the catalog.

PIONEER JOBBING HOUSE TO REPRESENT HOLBROOK

PORTLAND, Ore.—The Stubbs Electric Co., said to be the oldest electrical jobbing house north of San Francisco, has added the electric refrigeration line manufactured by Holbrook, Merrill & Stetson, Inc.

NOVEL ADVERTISING GETS APARTMENT HOUSE ORDERS

INDIANAPOLIS, Ind.—A novel method of newspaper advertising in this city has resulted in the equipping of a score of apartment buildings with electric refrigeration by the Hoosier Refrigerator Corp., distributors for General Electric refrigerators.

The distributor runs advertisements in the classified sections of two papers, one morning and one evening. Each ad is worded as follows: "We will be pleased to assist you in locating a desirable apartment equipped with General Electric Refrigerator, Telephone Apartment House Division, RI 9412."

Within the past few weeks, apartment house owners, awakened to the value of electric refrigeration, purchased 75 General Electric models.

In addition to serving persons looking for apartments, the distributor contacts apartment house owners and often, after explaining the service, installs refrigerators.

DIRECTORY CORRECTIONS

Printed below are corrections and additions to the annual catalog and directory, which appeared in the "Pink Section" of the Jan. 14 issue of Electric Refrigeration News.

Continental-Diamond Fibre Co.
Box 420, Newark, Del.
Bakelite insulating materials and (Dilecto) refrigerator strips.

Tyee Lumber & Mfg. Co.,
600 Myrtle St., Seattle, Wash.
Cut dimension woods for cabinet trade, including Sitka spruce, western hemlock and cedar. Also stock in board lengths.

FURNITURE OUTLET SUCCEEDS NORGE DISTRIBUTOR

SPRINGFIELD, Ill.—Johnston-Hatcher Co., furniture dealer, has taken the agency for Norge refrigerators for Springfield and vicinity.

The Norge was formerly handled in this city by the Haas Electric Mfg. Co. This company, together with the Bruce Co., piano and music dealer, A. W. Sikking and Co. and Agricultural Equipment Co., will handle the Majestic refrigerator.

SPOKANE DEALERS ORGANIZE REFRIGERATION BUREAU

SPOKANE, Wash.—The Spokane Electric Refrigeration Bureau has been formed with Ross B. McElroy, of the Washington Water Power Co., which merchandises electric appliances, as chairman.

Harvey Brassard of Syserson-Kelley, Inc., advertising agency of Spokane, has been named as secretary of the bureau.

TRESTRAIL CORP. OPENS VANCOUVER OFFICES

VANCOUVER, B. C.—The Trestrail Corp., Canadian distributor for the Majestic refrigerator, has opened offices at 1396 Richards St. here.

W. T. Burnham, previously connected with General Distributors and General Electric, will be in charge of the new branch.

FRIGIDAIRE DEALER SELLS LARGE JOBS

CANTON, Ohio—Brunnerdale seminary a new institution for training young men for the Catholic priesthood on the Brookside Rd., near here, will be Frigidaire equipped, according to L. S. McCrary, local Frigidaire sales manager.

Two compressors, 1 hp. and a 1½ h. p., will be installed to refrigerate the meat storage room, vegetable storage room, dairy products, and to run an ice maker.

An M. C. refrigerator with compartments for temperatures of four different degrees was installed by McCrary's organization in the suburban home of Bruce Robertson who uses his frozen storage compartment, his dairy products compartment and his vegetable compartment for storage of products he raises on his suburban estate.

Among the many residences that Canton Frigidaire has sold recently was the largest household size, an 18 cu. ft. to Dan Hoover, one of the owners and vice presidents of the Hoover Suction Sweeper Co. of North Canton.

L. Hoicowitz, Canton builder of fine homes has purchased several 8 cu. ft. Frigidaires, which he installs in his homes before he sells them.

Frigidaire also equipped a dairy farm job this week for J. L. Walter, dairy farmer near Canton who uses a 180 gal. brine tank.

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Two Cylinder Compressor

Query No. 417—"We are interested in obtaining information on a small two cylinder, sulphur dioxide compressor assembly having an ice meltage of approximately 225 lbs. on a 12-hour operation.

"We would like to have details of construction and materials, as well as prices on the same, both with and without fly wheels, caps and head valves."

Sulphur Dioxide Compressors

Query No. 418—Luis A. Dufaur of L. A. Dufaur & Co., Buenos Aires, Argentina, is at the Hotel Plaza, New York City, and desires to get in touch with manufacturers of SO_2 compressor units of 1/3, 1/2, 1 and 1½ hp. Literature is requested, also visits from manufacturers' representatives.

LUNDQUIST TO SPEAK BEFORE FOREIGN TRADE CONFERENCE

ST. LOUIS—R. A. Lundquist, manager of the Export Division of the Kelvinator Corp. will be one of the speakers on the program of the Fifth Central Mississippi Valley Foreign Trade Conference to be held at the Hotel Jefferson, May 22.

Mr. Lundquist's subject will be "The Marketing of a Typical American Specialty Abroad."

The conference will be under the auspices of the Foreign Trade Bureau of the Chamber of Commerce of St. Louis, with the cooperation of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance — Positions Wanted — fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS AVAILABLE

MANAGER wanted to take complete charge of new refrigeration department of large music house recently appointed distributor for Williams Ice-O-Matic. Must be fully qualified, furnish references. Address Jay Grinnell, 1515 Woodward Ave., Detroit, Mich.

MANUFACTURER would like to get in touch with representative calling on manufacturers and wholesale accessory supply trade. Write giving territory covered and present lines. Box No. 330.

POSITIONS WANTED

AVAILABLE June 1st, young man 38, with 12 years' experience electric refrigeration. Familiar with all types. Domestic and commercial experience covering both sales and service but am partial to service or engineering. Especially adapted for field contact; have traveled every section of United States. Box No. 334.

AVAILABLE: Service engineer with extensive experience in scientific service management and commercial engineering. Thoroughly familiar with methyl chloride and sulphur dioxide systems. Familiar with all estimation and layout work. Considerable experience in wholesale and commercial selling. Now employed. Box No. 333.

SALES MANAGER, 6½ years' experience household and commercial, wholesale and retail, organization and training of salesmen development of merchandising plans, university training, excellent references. Looking for opportunity with suitable reward for results. Box No. 335.

MISCELLANEOUS

WANTED—Gentleman or sales organization financially able to handle and finance the sale (national) of a new unit of considerable merit. This unit has been subjected to severe practical tests and proven superior to any in existence; it can be manufactured and sold for considerable less money than competing ones. Box No. 332.

NOW READY—A NEW BINDER FOR FILING BACK ISSUES OF THE NEWS

Often you want to refer to a news item, an illustration or an article which was published in the NEWS. How handy it would be to have back copies neatly filed in a manner which would make it easy to find what you want—and to find it quickly.

New binders are now ready. Thirty-six metal retaining strips are provided (the old binders had only 27), to allow for filing separately the individual sections of the paper if you wish. The metal retaining strips are easily inserted at the middle pages and secure the paper without "pinching." Every page lies flat and type matter is easily readable.

"ELECTRIC REFRIGERATION NEWS" is neatly stamped in gold on the top cover and on the back edge of these handsome binders. The stiff covers are made of good quality black imitation leather.

When you want to refer to something published in a back issue, a flip of the finger brings the information before you. Buy a binder!

Shipped postpaid upon receipt of $3.75.

ELECTRIC REFRIGERATION NEWS
550 Maccabees Bldg., Detroit.

SUBSCRIPTION ORDER

Electric Refrigeration News
550 Maccabees Building
Detroit, Michigan 1931

Gentlemen: Please enter my subscription to ELECTRIC REFRIGERATION NEWS.

United States and Possessions: ☐ $2.00 per year ☐ Three years for $5.00
All other Countries: ☐ $2.25 per year ☐ Two years for $4.00
Refrigerated Food Section only $1.00 per year.

I am enclosing payment in the form of ☐ Check ☐ P. O. Order ☐ Cash

Name.....
Attention of
or Care of.....
Street Address.....
City and State.....

Special Rates for Group Subscription Orders

For paid-in-advance subscriptions in United States only. Send check with order. Papers will be mailed to individual addresses.

5 or more subscriptions entered at one time, $1.75 per year each.

10 or more subscriptions entered at one time, $1.50 per year each.

20 or more subscriptions entered at one time, $1.25 per year each.

50 or more subscriptions entered at one time, $1.00 per year each.

5-20-31

PARKER COMPRESSORS
SINCE 1899

SULPHUR and METHYL 1-6 HP to 3 HP
AMMONIA 1 HP to 50 HP

For Immediate Delivery to Dealers

Hiram Fowler
15 Moore St.
New York, N. Y.

Herb Parker
2600 Santa Fe Ave.
Los Angeles, Calif.

STOCK CARRIED AT BOTH POINTS

Distributor Who Wants to Broaden His Activities

with a line that does not compete, but fits in with electrical refrigeration.

A company manufacturing kitchen equipment for 50 years, with highest mercantile rating, has good territory open on a major appliance, salable all year 'round.

Only distributors of good financial standing with a dealer following considered. Your enquiry implies no obligation. Address Box No. 331.

In Three Parts

Refrigerated Food Section

Part Two

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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TWO DOLLARS PER YEAR

ZAROTSCHENZEFF SHOWS PRODUCTS TO U. S. PACKERS

Russian Inventor Brings Quick-Freezing System Here

By George F. Taubeneck

CHICAGO—M. T. Zarotschenzeff, inventor of the "Z" method of quick-freezing, is making Chicago the headquarters for his project to introduce his system to American packers.

After showing samples of his quick-frozen fish, meats, vegetables, and fruit to cold storage men in and around New York, Zarotschenzeff—although not a young man—heeded Horace Greeley's advice and "went West."

At present he is arranging to display his wares to all the packers in the middle West whom he can interest. He seeks either to sell rights and equipment for quick-freezing by the "Z" method, or to get those already quick-freezing foods to abandon their present systems in favor of his.

Nowhere in Europe has progress in quick-frozen foods been comparable to that which has taken place in the United States, declares the Russian refrigerating engineer.

His "Z" system is being employed by a few Norwegian and French fishing vessels, and by the two British fish packing houses. Not being a livestock producer, England is not in a position to pack quick-frozen meats, he says.

In America he thinks he sees his golden opportunity. It is the land, he believes, where new ideas are met in a receptive mood by a public clamoring for new inventions and new modes. It is a country, he has been told, where men get rich. Perhaps, he hopes, he can make some money, too.

Sitting in the south side Chicago apartment of his three daughters, his eyes glow and his gestures multiply as he waxes enthusiastic about the prospects of the quick-freezing industry.

He does not speak American fluently or easily yet, and occasionally he must needs hasten to another room and inquire of one of his daughters the exact word he needs to convey his meaning.

There is no mistaking his emphatic belief in the future of quick-freezing,

(*Concluded on Page 8, Column 1*)

'Z' Comes To America

M. T. Zarotschenzeff, Russian refrigerating engineer who is now in Chicago, pictured with one of his quick-freezing systems.

GENERAL FOODS REPORTS RECORD SALES FOR APRIL

NEW YORK CITY—"Sales and earnings of General Foods Corp. in April, 1931, showed improvement over April, 1930, in spite of extensive price reductions during the past year," states C. M. Chester, president.

"Manufacturing economies have contributed much to the improved showing, but no wages or salaries have been reduced. We believe that keeping up the wage standard heightens employe morale and cooperation. This factor is undoubtedly aiding us in our program of industrial efficiency.

"Another factor has been increased effectiveness of our advertising and selling methods."

SEARS, ROEBUCK SEEK CITRUS FRUIT MAIL ORDER TRADE

CHICAGO—Oranges, grapefruit and tangerines have been added to the stock of the Sears, Roebuck & Co., Miami store, as the first step to establish a mail order trade in Florida citrus fruits.

At this time 10,000 boxes of citrus fruits have been contracted for. Orders from any section of the country will be filled and shipped by the Miami store.

COAST CO. STARTS MAKING REFRIGERATED TRUCKS

OAKLAND, Calif.—Wood Bros., 540 Fallon St., are now manufacturing refrigerated truck bodies and boxes for shipping and storing Dry-Ice.

They also make mould hardeners to be used with Dry-Ice. The firm has for many years past been manufacturing automobile bodies for special purposes.

McCRAY ANNOUNCES NEW DISPLAY CASES

KENDALLVILLE, Ind.—Two additions to the McCray line of refrigerated display cases are announced by H. M. Stewart, vice president and general manager of the McCray Refrigerator Co. of this city.

Built in lengths of 6, 8, 10 and 12 ft., the new refrigerator case, known as Model 107, features new improvements developed by McCray engineers. Two panes of glass making up the display front are 20½ ins. in width, with an increased slope, to allow greater visibility.

Two depressions in the top of the case near the lights serve as change trays. Ends of the case are porcelain with mirrors in the interiors held in place with Monel metal.

Exterior of the case in white porcelain trimmed with modeled Monel metal. Wood parts of the rear are of oak, with the base of open counter construction. The ends and top of the case are in-

(*Concluded on Page 8, Column 5*)

WHOLESALE MEAT PRICES SHOW DECLINE OVER 1930

CHICAGO—Wholesale prices of smoked picnics, or shoulders of pork, are now 31 per cent lower than a year ago, according to a statement issued today by the Institute of American Meat Packers, based on statistics supplied by the Bureau of Agricultural Economics of the U. S. Department of Agriculture.

Other meats that have shared general declines at wholesale, as compared with this time a year ago, include, dressed beef, 30 per cent lower; fresh pork loins, 13 per cent lower; smoked hams, 16 to 20 per cent lower; dressed lamb, 14 per cent lower; and veal, about 24 per cent lower.

CLEVELAND SUBURB BARS ROLLING STORES

CLEVELAND, Ohio—Echoes of Lakewood's fights against rolling stores were heard in Garfield Heights recently when officials of the new city decreed they can not operate in the Cleveland suburb.

The council approved an ordinance prohibiting the stores on wheels after rumors were heard that a company was planning to invade the suburb south of Cleveland with a fleet of autos.

The ordinance was approved merely as a precautionary measure, Joseph Farizel, clerk, explained.

Compact Ice Cream Freezer Placed On Market

CLEVELAND—A new ice cream freezer, built in compact form to occupy three squart feet of floor space in stores, is announced by the Anco Freezer Corp of this city.

The new freezer, known as Model No. 31, has facilities for freezing and storing of ice cream. This model is portable, as the built-in compartment for the refrigerating plant is constructed to accommodate any standard make of condensing unit. To install the freezer, it is only necessary to plug into an electric socket.

Capacity of the freezer, officials of the company state, is 5 gallons in one freezing, with a production of 20 gallons in one hour. To operate the unit, one places the mix in the freezer, adds the flavor, turns on the switch and the machine automatically makes ice cream.

The freezer compartment is totally enclosed, with the front and portions of the top and sides of glass. Formica Bakelite used on the top and sides of the cabinet is offered in colors to harmonize with store equipment. The freezer and all edges of the cabinet are trimmed in Monel metal.

To facilitate filling of a 5-gallon can or small cartons is a removable adjustable shelf, which can be set in several positions.

RATNER JOINS HOTEL AND INSTITUTIONAL MART

NEW YORK CITY—Richard Ratner, formerly president of Albert Pick-Barth Co., is now associated with the Hotel and Institutional Mart here as chairman of the advisory board.

J. H. B. Herts, vice president, will be in charge of decorating and planning at the national manufacturers and purveyors exhibit. At the exhibition literature, illustrations and specifications of the products displayed are available.

New offices of the Mart are located at 485 Madison Ave., one block away from the Hotel Equipment Building, where the permanent exhibition is located.

'PARK AND SHOP' STORE OPENS

WASHINGTON, D. C.—Safeway has recently opened a new "Park and Shop" store, a large, complete food market. It is situated 100 ft. from the curb and allows plenty of space for parking.

Thrift Stores Make New Deal With Birdseye

By C. G. Fairman

SPRINGFIELD, Mass.—Merchandising of Birdseye Frosted Foods by the Thrift Stores, Inc., operating six retail establishments in the city, has been put on a new basis by which the local organization buys the products at Boston f. o. b. prices, pays for their transportation by American Railway Express to the city, and establishes its own prices to the consumer.

This line is regarded as permanent with the Thrift stores, which operate on a self-service, cash-and-carry basis. Charles F. Meek, proprietor, says that the experiment of handling the line has justified itself, and that it will continue to be carried in the stores.

The departure from the plan of commission selling has brought about no marked changes of price, except in respect to blue-label sirloin steaks, which now sell at 85 cents a pound instead of 75, as previously.

Stewing lamb advanced from 23 to 27 cents a pound, but at the last-named price the item remains a good seller. Orange-label beef steaks now sell for 49 cents a pound, beef roasts at 53 and 39 cents for the blue and orange label products, respectively, and lamb roasts at 47 and 43 cents.

In all the stores carrying these foods chicken broilers at 69 cents, the larger frying chickens at the same price and ducklings at 53 cents are among the most popular items.

Beginning May 8 warehousing of the Birdseye Frosted Foods in this city was entirely discontinued and all shipments are directly from Boston.

INDEPENDENT, CHAIN STORE SALES STUDIED

WASHINGTON, D. C.—Based on returns from the Census of Retail Distribution which had been published by the Census Bureau prior to April 6, the Bureau of Foreign and Domestic Commerce has made a compilation of the percentage of sales made in all trades through single-store independents, local chains or multi-units, and sectional and national chains.

Approximately half of the 983 cities in the United States having a population of 10,000 or more are included in this compilation.

A striking relationship between the size of the city and the percentage of goods sold through single-store independents and multi-unit or chain organizations is revealed in analyzing the returns in size groups according to the city population.

Single-store independents account for approximately 62 per cent of total sales

(*Concluded on Page 8, Column 2*)

COOLING, DISPENSING UNIT BROUGHT OUT BY IGLOO

DETROIT—Marketing of a new refrigerated beverage dispenser to sell for $370 complete has been started by the Igloo Cooler Distributors, Inc., of this city, according to Charles D. Hamilton, secretary and treasurer of the distributing company.

Production of the cooler is underway at the plant of the Igloo Cooler Corp., located at 30 West Grand Ave., Highland Park, Mich.

The new cooler, which is of the non-automatic vending type, has special facilities for displaying the beverage in an attractive manner. Two bell shaped jars, spaced about an inch apart to allow for insulation, form the top portion of the dispenser. Within the inner jar,

(*Concluded on Page 8, Column 1*)

DENVER GROCERY INSTALLS NEW EQUIPMENT

DENVER—Four Capitol display cases and a walk-in cooler have been installed in the Alta Market, located at 1244 E. Colfax Ave. here. The equipment is refrigerated by a Lipman machine.

According to R. Parker, proprietor of the grocery and meat market, the cost of refrigerating perishables in his store has been lowered, as formerly $2 worth of ice was used daily.

BROTHERS CREDIT SUCCESS TO GOOD REFRIGERATION

Three Holbrook Markets Employ Adequate Equipment

By C. R. Sterritt

DETROIT — "Electric refrigeration is one of the main reasons for our success in business," declare Arnold, David and Tobias Fuhrer, all brothers and managers of the three Holbrook Markets, located at 7320 Grand River, 10780 Grand River, and 15340 Livernois Aves.

Arnold Fuhrer, manager of the market at 7320 Grand River, is the only one of the brothers to carry a line of frozen fish. This line is distributed by the Sterling, Wilson Mamblen Co., Inc., of Detroit.

A 10 ft. Zer-O-Viz display counter is used for the display of frosted swordfish, halibut, cod steak, filet of sole and oysters. A constant temperature of 0° F. is maintained by a 1 hp. Kelvinator unit.

Mr. Fuhrer states that so far there has not been a very great demand for these products, as he has only handled them about five months.

The store also handles a line of groceries and all other meats.

After the meat used in this market is cut into desirable sizes in a back room, it is placed attractively on parsley leaves in the refrigerated counters where it is kept at a temperature of 38° F.

There are seven cases on one side of this market. These contain all the meats. Offsetting these are the cheese, butter and milk cases on the other side. The cheese display is particularly striking. To balance this array of display counters, is the large 12 ft. case in the window that contains the choicest cuts of meat bargains for the day.

Design and layout of the market was handled by the American Show Case & Mfg. Co. of Detroit, which supplied fixture equipment for the market, grocery and bakery sections, with the exception of the top display compartments of the refrigerated cases and a large walk-in

(*Concluded on Page 8, Column 5*)

AUTOMATIC UNIT VENDS TEN CENT GROCERY ITEMS

ST. LOUIS—Twelve merchandise items can be retailed in the new "automatic grocery" which was recently placed on the market by the National Sales Machine Co. of this city.

The machine which is coin operated and designed for installation in apartment lobbies, fruit stores, meat markets, bakeries, has compartments for grocery items, such as bacon, eggs, lard, cheese, etc., which are packaged to retail at 10 cents.

Known as the National Automatic Grocery No. 12-10, the unit is built in two sections, each one having 6 tiers with 10 merchandise compartments in each tier.

To operate the machine it is only necessary to insert the coin and pull out the draw lever immediately below each tier. This causes the sliding shutter in front of the tier to drop to the stock-

(*Concluded on Page 8, Column 5*)

INTERNATIONAL FREEZER NOW EASTWOOD CO. DIVISION

PATERSON, N. J.—The International Freezer Corp., manufacturer of the cabinet and unit types of brine ice cream freezers, is now a division of the Benjamin Eastwood Co. of this city.

International's sales office will continue at 51 Madison Ave., New York City, according to E. P. Kline, sales manager of the company.

DECATUR PLANT INSTALLS PEDESTAL FOUNTAINS

DECATUR, Ill.—Eight Temprite pedestal fountains, No. 100-W, were recently installed in the plant of the Staley Starch Co. The equipment was purchased from the Illinois Power & Light Co., distributor in central Illinois.

DEVELOPMENTS IN LOW TEMPERATURE FIELD

Frozen Foods Progress Depends On Retailers' Equipment—Larkin

By Lester U. Larkin
Vice-President, Larkin-Warren Refrigerating Co.

WHEN the clouds of mystery have rolled away and the fog of misapprehension has lifted, the flood light of truth will reveal the dawn of a new giant industry.

Through much publicity and many educational programs, the public mind is grasping the vast magnitude and far-reaching effect of the quick freezing industry upon the merchandising of foodstuffs.

There is little question that, after all of the details have been worked out, it will revolutionize the methods of merchandising.

Past history has revealed that wherever a new industry sprang into existence and flourished there were broad, basic reasons for the inception of that industry.

The same sound principles of enlarging the market, greater economy in merchandising, lower cost of distribution, more sanitary methods, or some of the other basic reasons affecting the production, manufacture, distribution or consumption of a product, have been the result in every case.

Let us view the development of any new industry from a fair and unbiased viewpoint. Possibly we can best accomplish this by asking ourselves just what the people of our country would be doing if they were not employed in the production, manufacture, and sale of items which 35 years ago were either unheard of or considered luxuries.

Dependent on New Industries

The fact is that the entire livelihood of the nation and the world depends entirely on the development of new industries, for the reason that, as an industry develops, competition demands that more modern methods of producing that product must be employed for a continuation of successful operation of that industry.

More modern methods being employed, there is a resultant and continual saving in man power, which must be offset by another new industry, and must also be offset by less hours of employment per day or by less days of employment per week.

The problem of unemployment can not be coped with by any methods of financial relief or measures of dole, but must be met now and in the future by the only methods which have succeeded in the past.

You will well remember when 16 hours a day for labor was a common thing, and, as the development of more efficient production equipment came into common usage, the hours were reduced to 14, 12, then 10, and now the average employment per day is eight hours, and many institutions are adopting the five-day-week, so that we will gather from past history that there are only two possible methods of solving unemployment, and that is, by adding new industries and lessening the number of hours per week, so that all may be gainfully employed.

These facts were merely brought in to show what a vital factor any new industry becomes in the solving of that problem.

It would be folly for us to assume that the great food packers of the world, who are intensely interested at the present time in the promotion of quick-frozen package goods, would attempt to speed the development if it was not for the fact that they can see in the future tremendous advantages; namely, greater sales possibilities, a larger percentage of profit per pound, greater economy in merchandising, and a more sanitary method of handling.

Taking each of these advantages separately, and basing our conclusions on past history, we must realize that these advantages will be reflected to the producer, the retailer and the consumer.

Opportunity for Merchant

The progressive retail meat merchant will grasp the opportunity offered him and properly equip his shop to handle quick-frozen package goods, which includes not only meats, but an increasing line of vegetables and fruits.

When quick-frozen package goods were first announced it was difficult for the layman to differentiate between the new quick-frozen method and the old cold storage, but, as a few hundred merchants have taken on the sale of quick-frozen package goods and have received enthusiastic reports from their customers as to the quality of this merchandise, all have come to realize that there is a tremendous advantage in this new process, and it may be interesting to know just what this actual difference is.

Briefly, when meats are frozen by the quick-freeze process, they are frozen usually at a temperature around 40 degrees F. below zero, and by the most efficient methods they are frozen so quickly that large ice crystals do not have an opportunity to form. With the old cold storage methods the freezing process was slow, allowing the formation of large ice crystals, which pierced the cells in the meat, making each cell inter-communicating with the other. When the meat was defrosted the juices drained out, carrying the flavor with them, and leaving an undesirable product, while with the quick-freeze process there are several microscopic crystals formed within each cell, which has a tendency to stretch the cells rather than puncture them, which has a similar effect of aging meats, and at the same time has much the same effect on the meats as the housewife has when she pounds the steak in an attempt to make it tender.

Spoilage Loss Eliminated

Every retail merchant now handling vegetables and fruits realizes that especially on vegetables he sustains a tremendous loss in attempting to keep his vegetables in a salable condition.

By the quick-freeze process, the most select vegetables are placed in the package at the time of freezing; and they remain in that same condition until purchased by the consumer.

The quick-freezing process is a tremendous advantage in fruits, as it allows fruits to be picked when they are ripe, going directly from the tree to the package, enabling the purchaser to secure a tree-ripened product, which has never been possible before.

The modern development of the principle of quick-freezing and packaging perishable foods and preserving by a non-damaging microscopic ice crystal will make possible a lower cost to operate a combined grocery and packaged meat business, as compared with the cost of operating the present standard type of retail meat market.

A study of this subject reveals that the cost of operating the average grocery store is about two cents per pound. The average cost of operating a standard retail cash meat market appears to be between seven and seven and one-half cents per pound. (Operating cost includes interest on investment and depreciation.) Profit must be found above this figure.

The cost of operating a low temperature display and storage case will approximate $1.00 per day, depending on size, construction, and amount of insulation used in the case. Some cases will operate materially below $1.00 per day.

A sale, therefore, of but 100 pounds per day, or 700 pounds per week, at one cent per pound, would neutralize the cost of operating and maintaining the retailer's low temperature case.

With this cost neutralized, the remaining profits and methods of doing business would be the same as the grocery business.

A figure of three cents per pound may, therefore, be assumed as a fair average for the cost of conducting the packaged meat section of a combined grocery and packaged quick-frozen food store, which would include meats, poultry, fish, vegetables, fruits, and precooked and packaged food in substantial variety.

Further studies indicate that the manufacturing cost of converting cattle, lamb, etc., into packages, including all charges incident to cutting, packaging, weighing, labeling, and quick-freezing, including depreciation of equipment and including also cellephane, waxed paper, waxed cardboard boxes, or, in the case of roast, cellophane, and open-mesh cheese cloth of the lamb-bag type, would be not more than two and one-half cents per pound.

This would make a cost of added preparation in the packing house of not more than two and one-half cents to be added to the three cents representing the cost of operating the special combined grocery and packaged perishable foods type of store.

It is clear that this five and one-half cents is less than the present cost of operating a meat market without referring to the saving which would ensue to the packing house, by reason of its retention of fats, bones, etc., by saving in loss of shrinkage in transit and thereafter while in possession of the packer until sale is effected.

About 20,000 pounds is the average weight placed in a dressed beef refrigerator car. Under the package system this can be doubled, with consequent recognition in transportation rates.

No Shrinkage Problems

The new system is to the advantage of the retailer, as he has no problems of shrinkage or depreciation of merchandise and can carry a much greater variety.

A study of 574 grocery stores located in the United States and Canada show a net profit per hundred pounds of 1.8 per cent, or about one-quarter cent per pound. To assure a wide margin of estimating safely, I will increase this to one-third cent per pound.

The same investigation discloses a turn-over of grocery inventory of 10 times per annum.

The average wholesale cost of meats appears to be about two and one-half times the average wholesale cost per pound of groceries; therefore, a turn-over of inventory in meats of two and one-half times the turn-over rate of groceries, or 25 times per year, would neutralize the capital employed in the two sections of business; that is, $1,000.00 with 25 turn-overs in meat would do two and one-half times as much business as it would in groceries.

It follows then, that any excess of turn-overs in the meat business, as compared with these ratios of 10 to 25, would result in increased earnings in the meat business, as compared with the grocery business.

Investigations of Roy C. Lindquist, Chicago public accountant, as applying to 39 retail cash markets, will throw light upon this subject.

He shows that these 39 public markets turn their inventory, on an average, 81 times per year. For easy comparison we will reduce his figures to 75 turn-overs per year, which, by comparing with the above data, would make it necessary to employ $3,000.00 in the grocery business to transact as much business as would be done with $1,000.00 in the meat business.

The profit in the retail meat business per pound, as shown by Lindquist, is more than three times as much as the profit in the grocery business.

If, therefore, the average net profit in the meat business is more than three times as much per pound as in the grocery business, as shown by these painstaking investigations, and if the turnover in the cash meat business is three times as great as is necessary to equalize the ratio as between the per pound value of meats, as compared with groceries, it follows that the earnings of $1,000.00 in the meat business would be nine times as much on 75 turn-overs and an average of one per cent per pound net profit, as compared with the 10 turn-overs in the grocery business, with not more than one-third the net profit per pound on groceries as compared with meats.

Cost of Retailing Meats

Investigations made by Mr. Lindquist indicated the average cost of doing a retail cash meat business, when computed on the original weight of the whole cattle, whole lamb, etc., to be 5.8 cents per pound. It should be pointed out, however, that the weight of the original purchase was not the weight sold at retail.

A substantial percentage of fats, bones, and inedible trimmings are retained in the retail stores, and are returned to the packers and are sold to renderers at low prices per pound.

Therefore, the amount actually retailed is reduced by such goods returned for credit and also reduced by the evaporation of moisture and the losses in weighing small amounts at retail. Only a new study of the subject from the standpoint of analysis of actual retail sales and weights delivered to purchasers would reveal the precise facts.

It may be, however, reasonably assumed that this reduction in weight through goods returned to the renderers or packers, and the shrinkage through the goods left would so reduce the amounts sold at retail that the cost of doing business concentrated on the reduced tonnage represented by actual retail sales will carry the cost of doing business to from seven to seven and one-half cents per pound.

The net profits per pound would also be increased if concentrated on the retail sales alone, instead of upon the original weight of the wholesale purchasers.

Increasing the line of merchandise to be offered will increase the merchandising possibilities of the low temperature case.

Many sea food items which do not lend themselves to food preservation by heat sterilization, and which are too perishable for plus 32 degrees shipping, may be secured at more distant points, proceeding on board fishing vessels or on shore at points where great supplies of low cost sea foods are available, and then dispatched by low temperature transportation to the great centers of population.

Selling Branded Foods

Another outstanding advantage to the retailer of foodstuffs has been the notable development in the past 10 years in the merchandising of quality foods through the use of brands and labels.

Housewives have come to know that bulk goods have practically disappeared from the shelves of the retail store. Purchasers have become brand conscious; they know what brand they want, and ask for it.

The purchase of brand foods is a decided advantage. A brand name stands for a definite quality with which the consumer has become acquainted, and it also assures her of a definite quality in packaged form, convenient to handle. Labeled and branded goods simplify the selling problem, and reduce the selling cost.

In this late development in the merchandizing of foodstuffs, the purpose is two-fold; first, to make available to consumers the finest quality of fruits, vegetables, and meats in convenient packages; and second, to reduce the cost of the distribution.

Where the work of cutting and packaging is done at the packing plants, in the case of meats, substantial economies can be made in the utilization of fats and trimmings that might otherwise be wasted.

Another saving will be made through mass operations, which is utterly impossible in the retailer's shop. Finally, important savings in freight and distribution expense would be effected if it were possible to supply each market with the particular kind of meat required, rather than whole sides, quarters or wholesale cuts.

From the viewpoint of the retailer, the handling of package merchandise under well-known brands and labels materially simplifies his selling problem, because he knows his cost, and is relieved of the distribution losses that normally result from shrinkage and trimming.

Equipment Is Big Factor

The future of quick-frozen package goods depends largely upon the rate at which retailers provide themselves with the kind of refrigerating equipment necessary for proper handling.

The development of this equipment has been in the past one of the stumbling blocks to the progress of this industry.

When quick-frozen foods were first announced, it was thought that it was only necessary to adjust controls of the present refrigeration equipment for a lower temperature, after which frozen foods could be kept in perfect condition; however, the following difficulties developed:

First, temperatures around zero could not be maintained.

Second, when low temperatures were attained for a period, rapid frosting of the coils would result, with a resultant rise in temperature and a necessity of defrosting the coils, which meant a rise in temperature past the danger point for the proper preservation of frozen products.

Third, the construction of cases for ordinary temperatures was so light that (in most cases they did very well for temperatures above 32 degrees) when temperatures around zero were required the case would literally be pulled to pieces, because of the frosting and sweating problems. Many cases were constructed with slide doors, which were found to be entirely impractical. It was also found that cases with glass service doors were practically out of the question, and that doors with single gaskets entailed a considerable problem of heat leakage and frost accumulation upon the product.

Fourth, the problem of elimination of precipitation of moisture between the glasses, resulting in the destruction of the case and impaired vision.

Fifth, the precipitation of moisture on

(Concluded on Page 4, Column 3)

Selling Swift's Frozen Meats in Chicago Suburb

Two Warren cases are used to display Swift's frozen cuts in the market operated by the Middle West Stores Co. in Chicago Heights, Ill. The equipment was installed by the Copeland Refrigerator Co. of Chicago

MEAT DEALERS STAGE EDUCATIONAL EXHIBIT

By O. W. Bakke

OAKLAND, Calif.—Holbrook, Merrill & Stetson, Inc., combined forces with the Retail Meat Dealers Association of Alameda County in the installation of a model meat market in full operation at the Alameda County Food Show, held in this city a short time ago.

The meat exhibit at the show was under the supervision of J. H. Wilbur, president of the association.

It was the intention of the Association to present a thoroughly modern retail market in order to bring the story of "good meat" before the public, together with a display of the various fixtures and appliances which are modernizing the retail meat business.

The meats of the highest quality were secured through the cooperation of local packers and wholesalers and every variety was represented, including cured and smoked meats. Sales of meat to the public were made during the show.

The market was equipped with Holbrook, Merrill & Stetson, Inc. cases and refrigeration throughout, and consisted of one 6 ft. and one 10 ft. refrigerated meat display case and one 10 ft. delicatessen display case. Scale stands matching the cases were placed between adjacent units.

Fancy cuts of meat which were placed in the refrigerated cases on the opening day and allowed to remain until the last day of the show were found to be in excellent condition, in spite of the fact that the doors had been opened constantly during the eight days.

To complete the equipment of the market, Lincoln scales and meat grinders were placed in operation together with an American Chief electric slicer, a "Jim Vaughn" meat and bone saw, a cube steak machine and a Federal cash register.

Members of the Association acted as attendants in the market during the time the show was open and explained the various cuts of meat to visiting housewives, and distributed interesting folders giving meat recipes and other information as to the value of meat in the diet. They also acted as salesmen during the times when the meat was sold each day.

FIVE SERVEL COMMERCIALS SOLD BY BUFFALO CO.

BUFFALO, N. Y.—The Mollenberg-Betz Machine Co., 40 Henry St., dealer in refrigerating machinery has placed the following installations:

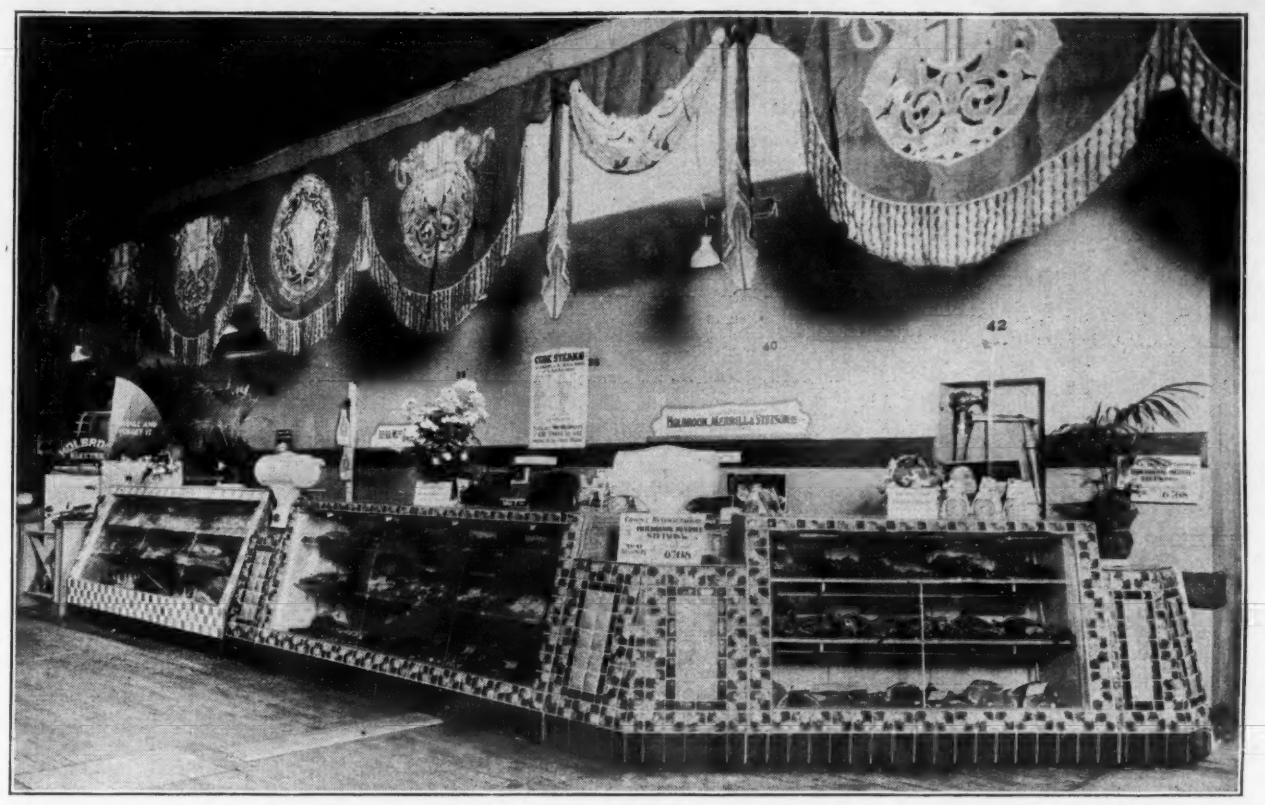
In East Amherst, N Y., Adam Cornelius, owner of one of the finest accredited Guernsey herds in this section, had a 14-can Esco milk cooler and a 100 CW Servel compressor installed on his farm.

Joseph Magaliski's meat market at 271 Walden Ave., has been equipped with a 100 AW Servel compressor and an 86 C Larkin coil to refrigerate a walk-in cooler.

In John Steinhauser's meat market at 195 High St., the company installed a 210 T special Larkin coil and a 50 AW Servel compressor to refrigerate a 20-ft. meat display case. In Steinhauser's market, 282 Gold St., two 108 C Larkin coils and a 100 CW Servel compressor were installed.

Raymond Phillip Weil, who operates a florist shop purchased a 64 C Larkin coil and a 50 CW Servel compressor to cool a specially constructed florist display case.

Model Meat Market Demonstrated



Fancy cuts of meats were displayed in refrigerated cases at the model market exhibit, which attracted much attention at the Alameda County Food Show.

BUILDS COOLER, PURCHASES TRUPAR COMPRESSOR UNIT

BANGOR, Me.—Refrigerating costs of a home made walk-in cooler in Eaton's Cash Market in this city run less than $4 a month, according to the proprietor.

This bill for electric current includes, in addition to the refrigerating system, the cost of operating two meat grinders. During the month of January, 1931, the electric bill was only $2.61.

When the proprietor of the Bangor market decided to install mechanical refrigeration, he went ahead and constructed a home made walk-in cooler of ¾ in. hard pine lumber, using insulation of ⅜ in. of Celotex. A double glass window, 16 in. by 36 in., in the front makes it possible for customers to see the meats stored in the cooler.

Refrigerating the cooler is a Mayflower commercial unit, Model No. 1000 and two No. 88-C coils, which were installed by R. N. Bicknell of the Bangor Mill Supply Corp. A temperature of 34° to 36° F. is maintained in the cooler at all times.

RUDDY COMPANY OPENS NEW SHOWROOMS IN TORONTO

TORONTO, Ont.—New showrooms have been opened recently at 11 Court St. by the Ruddy Mfg. Co. Ltd., of Brantford, Ont., manufacturer of the "Ruddy-Russ" soda fountain.

A complete line of "Ruddy-Russ" soda fountains, Ruddy commercial refrigerators, and general equipment for fountains, etc., will be on display at all times in the showrooms.

A. R. Webb has full charge of the soda fountain department, and C. Dowson is in charge of commercial refrigerator sales and service.

VILTER LANDS CONTRACT

MILWAUKEE, Wis.—The Vilter Mfg. Co. has been awarded the contract for the refrigerating and ice making plant of the Naval hospital at Chelsea, Mass. The bid was $11,185.

FIXTURE CO. SELLS 30 CASES

PORTLAND, Ore.—The Inland Fixture Co. has received and delivered 30 orders for refrigerator cases since the first of this year. This is a gain over the same period last year.

FIVE CITIES REPORT RETAIL FOOD SALES

WASHINGTON, D. C.—Slightly more than 22 per cent of the total retail sales in the cities of Milwaukee, Baltimore, Cleveland, Dallas and San Antonio during the year 1929 were reported by food stores, according to figures released by the Bureau of Census.

Milwaukee with 2,789 food stores reported sales reaching a total of $86,775,263, or 24.98 per cent of all retail sales in that city. The 1,353 grocery stores in Milwaukee accounted for $28,983,827 of this figure. Groceries with meat departments, numbering 558, reported 1929 business totaling $20,103,780.

Baltimore's 6,308 food shops did a $113,091,863 business during 1929, which was 29.73 per cent of the total retail sales in the city. The 934 grocery stores reported sales of $16,360,885, while grocery stores with meat departments, 1,695 in number, made sales of $36,511,909. The 846 meat markets turned in sales amounting to $19,364,398.

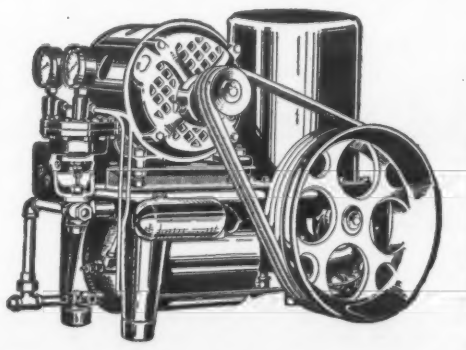
In Cleveland 5,380 food stores did a retail business of $119,147,316, or 22.30 per cent of retail sales in the city. The 1,349 grocery stores reported sales of $31,540,750 and the 876 combination groceries and markets made sales of $31,684,960.

The 966 Dallas stores reporting to the Census Bureau did $29,949,979 of business, with the 200 grocery stores accounting for $1,967,188 of this sum. The 641 groceries with meat departments made sales approximating $23,960,605, while meat markets, numbering 38 made sales of $910,774.

In San Antonio, the 1,154 food shops covered in the Census reported sales totaling $21,267,120, with 507 groceries doing $7,263,661 of this sum.

Both Dallas and San Antonio reported food sales less than 20 per cent of the total retail sales made in the two cities.

CLEAN DESIGN



Clean design is one indication of perfected mechanism. The New Carbondale Excelsior Refrigerating Machine immediately inspires confidence by its sturdy steel construction, compactness and simplicity. The clean-cut design emphasizes the quality and modern construction of the entire unit.

Each part of the Excelsior Refrigerating Machine has been treated as a separate engineering problem and then co-ordinated into a perfect working unit.

Ammonia, the standard commercial refrigerant and water-cooling of the entire compressor give the capacity, the durability and the rapid refrigerating action required in commercial use.

Excelsiors are built by one of the pioneers in the industry with a background of more than 40 years' experience in commercial refrigeration.

Aggressive Refrigeration Dealers will find the Excelsior Franchise an increasingly valuable asset.

THE CARBONDALE MACHINE CO.
Main Offices, CARBONDALE, PA.
Address inquiries to Excelsior Division, South Norwalk, Conn.

HERE IT IS!

▲ The New Model No. 31 ANCO Supreme Freezing Unit
▲ Built, Especially, to meet the needs of Progressive Merchant
▲ *Complete • Automatic • Efficient • Compact*

1 The only ice cream freezing plant, for retail merchants, which is portable and complete in one unit. It does not require any further installation than the plugging into an electric socket.

2 Requires a floor space of only 34x36 inches, and can be placed in most any window during the summer months—then moved in line with your soda fountain or other counters, during the winter by just transferring the electrical connection.

3 The only ice cream freezer enclosed in glass, as standard equipment, to meet the most stringent sanitary requirements.

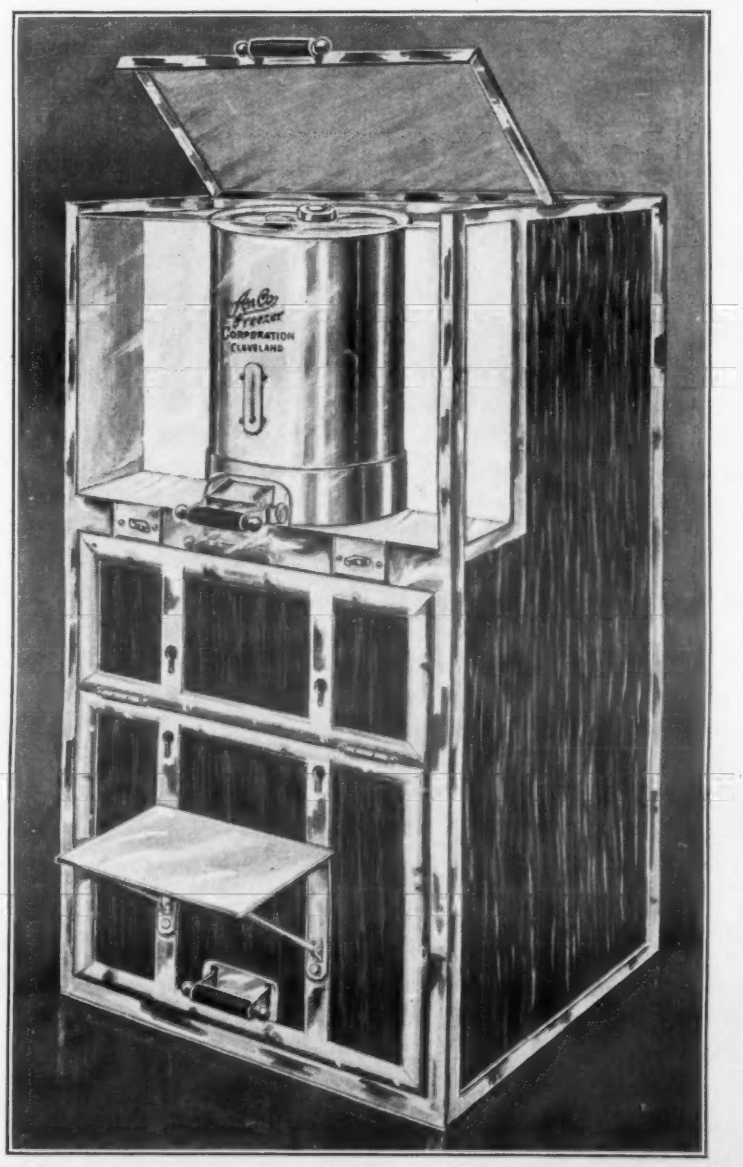
4 Removable and adjustable filling shelf to accommodate either a five-gallon can or small packages.

5 So complete that it can be put into operation immediately upon being set on your floor.

6 The only ice cream freezer with the refrigerator plant built in the same unit.

7 Foolproof and entirely automatic.

8 Five-gallon freezer capacity.



Sold to dealers with or without compressor. Can be operated with any make of refrigerating plant.

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Lights Under Bushels

NOW that Governor Ritchie has vetoed the Maryland legislature's bill to handicap the sales of quick-frozen meats, no sizeable prohibition of quick-frozen foods seems in sight. Yet distribution of these new products is still being made through unpublicized channels.

The American public is buying and consuming quick-frozen products in larger and larger quantities, without being entirely conscious of the fact.

Large institutions, such as hotels, restaurants, clubs, hospitals, and the like, are rapidly becoming regular patrons of fish, meat, fruit, and vegetable packers who use the quick-freezing process.

They have been sold on quick-frozen products because they have found that not only are these packaged foods dependable and convenient, but they are of better quality than the fresh goods sold in food markets.

Hence many institutions are taking a big volume of quick-frozen foods, some of the large packers report. It appears, however, that they are not capitalizing upon these new values. The sharp-chilled products they buy are being sold as ordinary food.

General Foods

Birdseye Frosted Foods, produced and sold under the General Foods banner, have not hidden their light under a bushel.

Last year the campaign for these quick-frozen foods, conducted in Springfield, Massachusetts, was highly publicized. More quietly, but effectively, Birdseye products are now being introduced into other New England cities.

Nevertheless, advices from the Atlantic Coast Fisheries, General Foods subsidiary, which is quick-freezing fish in Gloucester, Massachusetts, from Batchelder, Snyder, Dorr & Doe, the Boston packing house which quick-freezes meats for Birdseye, and from Ray Maling, Inc., the Oregon firm which produces Birdseye Frosted vegetables, indicate that a large volume of their output is being taken by institutions. And few, if any, of these hotels and restaurants are taking advantage of the opportunity to inform their patrons that these products are included on the bill of fare.

Tom Huston

In the Southland, Tom Huston has built up a good trade in his quick-frozen peaches, bananas, and other frozen fruit confections. He is planning to erect another plant for freezing orange juice, and frozen figs will probably be added to his line within a short time.

He finds a ready market for his frozen fruits among southern confectioners and food stores, and is advertising them widely down there. In the North and East, however, he is selling almost entirely to hotels, restaurants, and clubs.

These extensive merchandising operations beyond the Mason-Dixon line have been kept quiet, largely due to the fact that the institutions to which the Huston organization sells do not seem to see the advertising possibilities of this new kind of food. Tom's quick-frozen peaches, however, are in great demand by the better class of these northern and eastern meal-serving establishments.

Swift & Co.

The large Chicago packing house of Swift & Co. is entirely sold on the idea of quick-frozen meats, and is steadily plugging ahead with the production and merchandising of its line of these foods. Libby, McNeill, and Libby, a Swift subsidiary, is producing and selling many varieties of quick-frozen vegetables.

The distribution of these products is accomplished more or less under cover, however. Swift's quick-frozen, packaged meat cuts are not advertised as such, but are known as "Identifiable" meats. Each month more outlets for these products are established, but the job is done as quietly as possible.

At present Swift's quick-frozen products are sold largely through institutions, and through retail grocery stores in Chicago and vicinity. Occasional scattered outlets can be found in Iowa, in towns a short distance downstate in Illinois, and in Indiana. A steady invasion of Michigan is planned for the spring and summer. Already grocery stores in several Michigan cities have added the "Identifiable" line, and more are considering taking the step. Nowhere, however, is Swift advertising its new products. It is leaving this job up to the retailers who take on the line.

Armour & Co.

Executives of Armour & Co. have decided to wait until a quantity demand for quick-frozen foods arises before merchandising the line of sharp-chilled meats they have developed. At present, it is said, no producer of quick-frozen foods packs more than a carload a day. This output would be but a proverbial drop in the bucket to Armour & Co., which has packing houses that often ship a hundred carloads of meat a day.

In the Armour laboratories, however, experiments on the quick-freezing, packaging, and storage of meats have been carried to completion; and Armour officials feel that they know just what to do should a quantity demand for quick-frozen products arise from the general public.

National Dairy Products Corp.

One concern which does not hesitate to tell the world about its frozen products is the National Juice Co., a subsidiary of the National Dairy Products Corp. This concern is now distributing frozen orange juice in New York, New Haven, Buffalo, Cleveland, Detroit, and Erie, Pa., through its milk and ice cream subsidiaries.

In each city chosen for distribution of this frozen orange juice, extensive advertising campaigns are being carried on, and every available method of informing the public concerning the new frozen drink is being utilized.

The Phantom Public

The bugaboo of public disapproval of quick-frozen foods seems to vanish wherever they are introduced. The experience of the National Dairy Products Corp. in its young campaign, of the Indianapolis Abattoir Co. in its distribution of Sally Lee Frigid meats, and of the Birdseye Packing Co. in Springfield and other cities, demonstrates that housewives do not seem prejudiced against quick-frozen meats, that they appear to be ready and willing to try them, and that they usually become repeat customers.

In Maryland, and in a few scattered cities, legislative attempts have been made to prohibit or limit the merchandising of quick-frozen meats. Apparently butchers have been largely responsible for these actions in every case, however, and nowhere has any consumer resistance of this type developed.

The general assumption that the public would disapprove of quick-frozen foods on principle appears to be predicated entirely upon unfounded premises.

Inasmuch as a well-defined demand for frozen foods has arisen through institutional channels, and since the expected consumer prejudice seems to be an imaginary bogey, it would appear that aggressive attempts to sell the phantom public upon quick-frozen products might meet with success.

The public is eating quick-frozen food and likes it. If it were told about what it is eating, it might consume more.

Future of Frozen Foods Depends Largely on Retailers' Equipment

(*Concluded from Page 2, Column 5*)

the front glass, which resulted in impaired vision.

There were, of course, many other details to this problem, but nearly all of them were embodied in the five principal difficulties encountered. In the selection of a case it will be wise for the retailer to take into consideration the following points of construction:

How the frame work of the case is constructed.

How much insulation is employed.

How well the insulation is sealed in the case.

Are the doors in the back of the case solid or glass?

How many glasses are employed in the front of the case?

What method has the manufacturer provided for defrosting; and can the frost removed be taken out of the case without the removal of goods stored therein?

What method has the manufacturer employed for the elimination or removal of precipitation between the glasses?

What method has the manufacturer employed for the elimination or removal of precipitation from the front glass?

What method has the manufacturer employed for the cementing of the outter front stop to the front glass and contact to the case, so as to insure elimination of moisture entering into the construction of the case.

Is the hardware of this case heavy enough to insure permanent elimination of passage of air around the door jambs and also breakage of the hardware?

All of these factors enter into the cost of your equipment over a period of time, and should be carefully considered in the purchase of your equipment.

Packaging Brings Economy

So far as the work of selecting, cutting, and packaging is concerned, experience to date clearly shows that these operations are entirely practical, and lend admirably to waste elimination in the marketing process.

More than that, the economical marketing of meat in attractive, convenient packages should be the means of inducing more people to eat more of this healthful, stimulating food.

Under the old system of merchandising meats, a background of experience and expert knowledge of cutting was essential; but under the new system practically no knowledge of meats or meat cutting is required to handle packaged meats successfully.

The retailer can now devote his time to better merchandising, and other problems of attracting and satisfying his customers. His attention can be concentrated on studying and supplying the demands of his trade.

Space required is of paramount importance when a grocer makes plans to add meats to the line of products handled.

In many cases expensive alterations for acquiring additional space in his store will deter him from adding a line of meats, and with quick-frozen package goods the only equipment required is a low temperature case, which will cost from $500.00 to $1,500.00, and occupies only about one-third as much space as the equipment in a typical fresh meat department.

It has been estimated that the average investment needed for equipment, including cutting blocks, slicing machines, tools, etc., in a typical fresh meat department, amounts to more than $3,000.00.

Display Proves Effective

A display in either fresh meats or packaged goods has been proven to be essential, as the display case is an effective silent salesman, and it has also been tabulated that six times the number of people are reached and sold through their eyes as the number sold through conversation in the merchandising field.

When package goods are added to a grocery store or market, additional volume is obtained at little or no additional sales expense, helping to absorb total overhead, thereby reducing the cost of selling both groceries and meats.

Furthermore, customers who come to your store with the intention of buying meats also purchase groceries, and vice-versa, increasing both the number of customers and the average sale per customer.

Some of the most important economies resulting from the handling of packaged meat in a combination store are as follows:

(1) Less handling of meat in taking it from and returning it to the refrigerator.

(2) Quick-frozen package goods may be sold by the same clerks that attend to the sale of other packaged products in the store.

(3) There is a reduction of rent and refrigeration expense of the meat department.

When the necessity of having a specialized meat man is eliminated, there is no need for two managers in the same store. The supervision of both meat and grocery departments can be under the jurisdiction of one manager, thus reducing managerial expense.

Much of the total weight of meat purchased by retailers disappears, due to the removal of bones and shrinkage (also to evaporation of moisture) when meats are cut in retail shops. The cost per pound, therefore, of meat actually sold by the retailer is more than the price he pays the packer.

Considering only these two items, the retailer can pay more per pound for packaged meats than he does for fresh meats and still he will be paying less for each pound of meat which he actually sells.

Therefore, he would make more net profit, even if his other expenses remained the same, which they would not. Spoilage, leakage, trimming off dark portions, lowering prices in order to dispose of slow-moving cuts, cutting expenses, etc., would be eliminated.

Cost Can Be Determined

When purchasing quick-frozen foods in packages, it is possible to determine the desired gross margin mark-up on each item, the same as on a can of corn, a box of crackers or other packaged foods. The cost of each different package purchased is definitely known.

Furthermore, there is little possibility of losses from shrinkage, trimming, or spoilage if quick-frozen package goods are properly handled. The loss which frequently occurs, due to unskilled or improper cutting in the retail shop is entirely eliminated.

For these results, the same number of pounds purchased are sold at a definite price, so that the gross profit may be figured exactly.

When fresh meat is purchased in carcasses or wholesale cuts, the retailer must necessarily buy many cuts for which he has very little demand.

When packaged meats are handled it is possible to account for all the products purchased, because waste and shrinkage is eliminated.

On Our Bookshelves

"MILK AND MILK PRODUCTS"

By C. H. Eckles, W. B. Combs, and H. Macy. Publisher: Whittlesey House, McGraw-Hill Book Co., Inc., New York City. Publication date: 1929. Pages, 379, including appendix and index. Price $5.

ONE of the frequent queries received by editors of the NEWS from subscribers is for information on the estimating of milk cooling installation. Perhaps one way to get at this somewhat unavailable information would be to study the characteristics of milk itself, and the problems of milk producers.

To the salesman of commercial refrigeration it is fundamentally important that he be able to talk the language of his prospects. When he approaches dairymen, he should know something about milk properties, dairy processes, microbioligy, milk marketing, and the manufacture of dairy products.

Armed with information of this nature, he can then talk to the dairy farmer about the latter's own products and problems, and suggest proper milk cooling equipment accordingly, instead of confining his sales talk to a presentation of the merits of the machine he represents.

"Milk and Milk Products" is a compilation of material on dairying problems. Although not written for the refrigeration engineer or salesman, it should suggest to him many valuable avenues of thought in attacking his own particular questions.

The authors prepared it especially for use by agricultural college students who want to know more about dairying than they would accumulate from the general farming courses.

They devote a long chapter to description of the various dairy processes, separation, straining, filtration, pasteurization, homogenization, and emulsification. Many of the processes are illustrated with equipment used to accomplish these treatments.

A chapter on market milk points out the immense size of the industry which serves some 60,000,000 daily consumers with an average of about one and a quarter pints daily. Then, starting with the production of market milk by the farmer, the chapter traces milk transportation to its delivery at the consumer's doorstep.

Throughout the book, the authors stress the necessity of strict sanitation in all handling and treating operations, and the importance of keeping dairy products away from all odors.

The advent of refrigeration has had a far-reaching effect upon markets and prices of dairy products, according to one chapter. "Without the use of this system, the modern dairy industry would be helpless, and could not exist in anything like its present magnitude," the authors state.

A PAGE FOR HOME SERVICE WOMEN

FOOD EXPERT GIVES DESSERT RECIPES

By Clara Gebhard Snyder

PRUNE ice cream is a veritable gold mine of health, or more accurately, a vertiable iron mine, for in it we have two of the richest sources of food iron: egg yolk and prunes. Carrot custard will intrigue the unsuspecting vegetable hater into asking for more carrots.

Prune Ice Cream

1 cup milk
1/3 cup sugar
1 tablespoon lemon juice
1 cup cream or evaporated milk, whipped
2 eggs, separated
1 cup prune pulp, or
2 4-oz. cans prune pulp
⅛ teaspoon salt.

Scald milk in double boiler. Beat egg yolks with sugar, and pour hot milk over them, stirring continuously. Return to double boiler and cook until mixture coats spoon (about 5 minutes). Cool. Add salt and lemon juice to prune pulp. Blend thoroughly into custard.

Fold in stiffly beaten egg whites and freeze in mechanical refrigerator.

Carrot Custard

2 4½-oz. cans Gerber's strained carrots, or 1 cup mashed carrots
2 eggs
2 teaspoons butter, melted
4 tablespoons milk
2 teaspoons sugar
1½ teaspoons salt
2 tablespoons orange juice.

Add butter, milk, sugar, salt and orange juice to carrots. Mix well and add to the beaten eggs. Pour into individual custard cups and set in pan of water. Bake 35 minutes in moderate oven (325 F.), or until knife blade inserted comes out clean. Serve either hot or cold.

Cream Puffs

3 tablespoons lard
½ cup boiling water
½ cup bread flour
2 eggs, unbeaten
¼ teaspoon salt.

Put water and lard in pan and bring to boil. While boiling, add flour, stirring constantly, and while hot, add unbeaten eggs, one at a time, beating the first in thoroughly before adding the next.

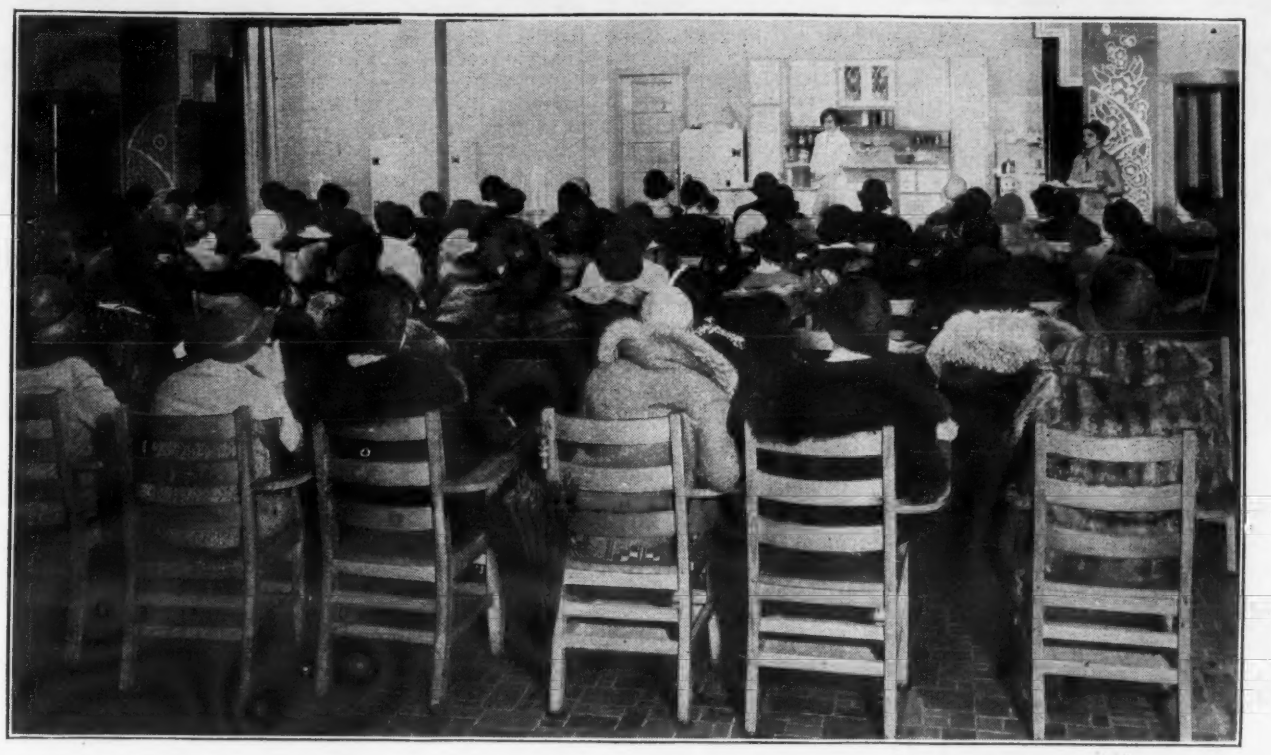
Drop by spoonfuls on cookie sheet. Bake 15 minutes in hot oven (425 F.). Then reduce heat to 350 F. and bake for 45 minutes more, or until dried out. When cool fill with filling.

RETAIL STORE OPENED

CINCINNATI—The Bauer Ice Cream and Baking Co. has opened a new store on Government Square.

E. W. Herzog is manager of the store which sells lunches as well as ice cream and fancy cakes.

Cold Cookery Demonstration Attracts Crowd



One of the busiest spots in the Judson C. Burns Bldg. in Philadelphia is Refrigeration Institute on the fourth floor, where cold cookery classes are conducted under the guidance of Ella Fay McCue. Pictured here is a gathering of women listening attentively to one of Miss McCue's lectures. General Electric refrigerator owners and their friends gather at the Institute every week for instructions in home economics.

LETTUCE, MAYONNAISE ORDERS KEEP APACE

WASHINGTON, D. C.—"There is apparently a close relationship between carlot shipments of lettuce and monthly sales of mayonnaire and related products," says R. S. Hollingshead, assistant chief of the foodstuffs division of the U. S. Bureau of Foreign and Domestic Commerce, and in charge of the annual survey of the mayonnaise, salad dressing, and related products industry.

"This suggests the possibility of control of production by correlation with carlot shipments of lettuce, in view of the fact that fluctuations in these shipmeats are a month ahead of similar fluctuations in mayonnaise sales."

Formulated from information furnished by 83 mayonnaise manufacturers, the sales curve of this group shows a gradual rise in January, the greatest volume of business being in the months of March to July, inclusive. There was a gradual tapering off in August, with the least volume of business during the year done in the month of December.

MIDYETT JOINS KELVINATOR HOME ECONOMICS STAFF

DETROIT—Louise Midyett has recently joined the Kelvinator home economics staff. After special training in the Kelvin Kitchen, she will go into the field to demonstrate the Kelvinator refrigerator.

She was formerly connected with the O. K. Houcks Piano Co., where she was doing home economics work and selling Kelvinators.

Economist Gives Hints About Storing Foods In Electric Refrigerator

By Marion F. Sawyer
Home Economics Department
Kelvinator Corp.

THERE are certain principles which must be understood, and certain rules which must be followed in order to preserve food properly in your electric refrigerator.

In the first place it must be remembered that the atmosphere in the electric refrigerator is an intense dry cold one. This is a decided advantage, for it is the moisture in the air, and not the air itself which carries odors, and moisture in the air is conducive to spoilage.

However, since the air is dry, moist foods must be protected to prevent drying out. Foods with their own covering, such as eggs and oranges need not be covered, but butter, milk, cheese, meats and left-overs, as well as berries and other delicate fruits, vegetables and greens such as lettuce and celery, should all be stored in covered containers.

Attention must also be given to the proper placing of foods in the cabinet. Since proper refrigeration depends on air circulation, foods should not be crowded on the shelves, nor placed too close to the sides of the box.

The bottom of the cabinet is always a few degrees colder than the shelves, and for this reason the more perishable foods, such as milk and uncooked meats, fish, butter and soup stock belong on the lowest shelves.

On the top shelf should go all foods with characteristic odors such as pineapple, canteloupe, and cheese. The air of the box, passing over these foods last will deposit all odors on the cooling unit, and will not carry them around to other foods.

Many delicious frozen dishes may be made in your electric refrigerator. The recipes printed below have all been tested in the Kelvin Kitchen.

Veal Loaf

Veal soup bone, salt and pepper, 1 tablespoon gelatine, ¼ cup cold water, 2 hard cooked eggs. Boil soup bone in small amount of water until meat is tender. Shred the meat to make one cup, season with salt and pepper.

Add one cup of veal liquor to which has been added the gelatine dissolved in cold water. Slice 2 hard cooked eggs. Pack veal and eggs in alternate layers in mold. Chill in refrigerator. Serve on lettuce leaves and garnish.

Vegetable Salad

Two tablespoons gelatine, ¼ cup cold water, 2 tablespoons lemon juice, 2 cups boiling water, ½ cup sugar, 1 teaspoon salt, 8 slices tomato, 8 green pepper rings, 1 cup chopped celery, 5 stuffed olives, sliced, 5 tablespoons mayonnaise. Soak gelatine in cold water about five minutes. Add lemon juice, boiling water, sugar and salt. Wet eight individual molds.

Place a thin slice of tomato in each mold and place pepper ring over the tomato. Fill center of ring with chopped celery, and decorate with slices of olives. When gelatine mixture begins to stiffen, turn into molds and chill in refrigerator. To serve, remove from mold and place in crisp lettuce leaves. Garnish with mayonnaise. Serves eight.

Coffee Parfait

Use 2/3 cup sugar, ½ cup strong coffee, 1 teaspoon vanilla, 2 whole eggs, 2 cups heavy cream, salt. Make coffee in the proportion of 2 tablespoons of coffee to one cup water. Boil ½ cup of this coffee with the sugar until it spins a thread.

Pour this syrup over the well beaten egg yolks, beat well, then fold into the well beaten whites and beat until cool. Add vanilla and fold in the whipped cream. Pour into refrigerator tray and freeze three hours. Fills one tray.

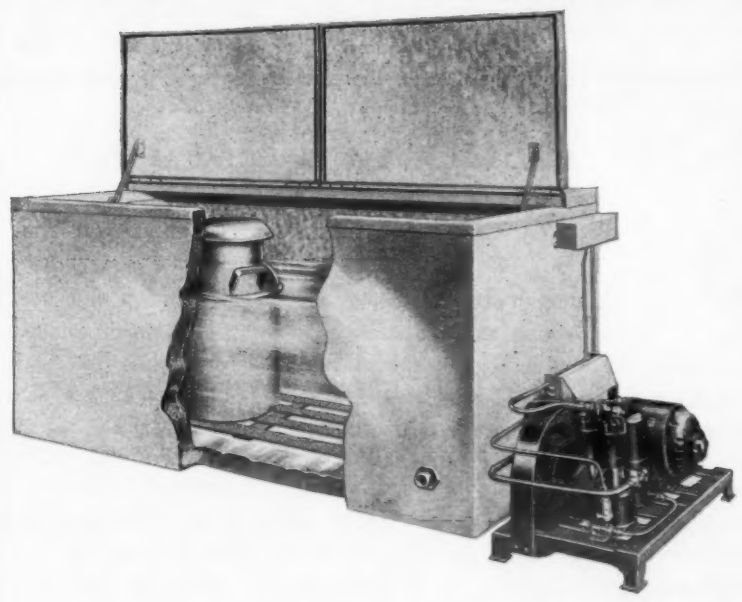
WATERBURY CO. ADDS LINE

WATERBURY, Conn.—Hampson, Mintie & Abbott, Inc., has accepted the agency in this city for the Leonard electric refrigerator.

Oh! For the Life of a Salesman!

Demonstrating a Servel to Jeanne Dunn, prominent Pacific Coast radio artist, who is having one installed in her home. W. L. Kirkpatrick, manager of the refrigeration department, Platt Music Co., Los Angeles, recently appointed dealer for Servel, is the demonstrator.

THE
UNIVERSAL
MILK COOLER



. . . . . is more efficient and easily sold . . . . .

REALIZING that the rapid chilling and cold storage of milk is of first importance to the milk dealer in keeping down the bacteria count and making certain of the sale of his product, Universal Cooler perfected a method that cools milk faster and more economically than any other on the market. A coil of copper tubing is laid in the bottom of the cabinet and connected to a Universal Condensing Unit causing a cake of ice weighing from 300 to 600 lbs. to remain in the bottom of the cabinet at all times and making it possible to cool milk from cow temperature to 50° in one hour—an exclusive Universal feature that is responsible for the popularity of Universal Milk Coolers as demonstrated by their sales.

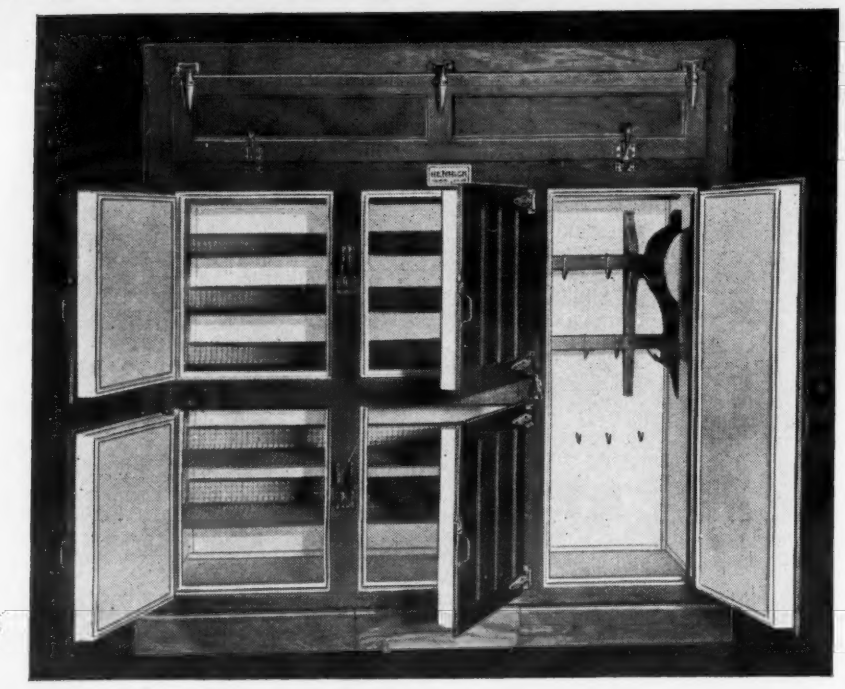
Write for complete information about this fast selling and highly profitable product.

Universal Cooler Corporation

Detroit, Mich. - - - Windsor, Ontario, Canada

You speak your prospect's language
When you describe this new

HERRICK



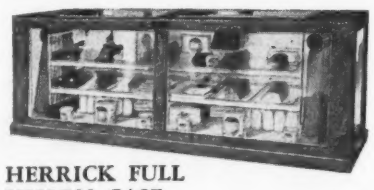
Speed—Convenience—Sales—*Profit!*

Whatever type of mechanical equipment you sell, you will insure best possible results by recommending its installation in one of these modern HERRICKS.

Grocer—butcher—restaurant owner—they all recognize the advantages of this new HERRICK for overhead refrigeration. It is built especially for food retailers . . . built by a company which has been furnishing commercial refrigerators for two generations . . . whose stand for quality has been unflinching.

Overhead coils make all reachable space usable. Shelves are free from obstruction. Air duct at back insures thorough circulation. Doors conveniently spaced . . . conveniently opened and closed. Storage models as above, also display models, with all glass doors.

Illustrated pamphlet describes four models now ready. Write for it.



HERRICK FULL VISION CASE
—a most effective and economic display unit with coils at each end.

HERRICK REFRIGERATOR CO.
1005 RIVER ST., WATERLOO, IOWA

TO HELP YOU MAKE MORE SALES

If you are a manufacturer, distributor, or dealer, you can use the *Refrigerated Food Section* as a definite aid in the promotion of commercial sales. Simply see that it reaches your commercial prospects.

In the *Refrigerated Food Section* will be found news and information of interest to meat merchants and grocers, chain store executives, ice cream manufacturers, druggists, confectioners, restaurant owners, and all food service establishments.

Your prospects will be better informed on the advantages of up-to-date refrigeration equipment by reading the *Refrigerated Food Section.*

Use the blank below to order extra copies for distribution by your salesmen. Or send to ELECTRIC REFRIGERATION NEWS the names of companies to which you would like to have sample copies sent.—Editor.

Order *for* Refrigerated Food Section

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☐ Send.....copies of Refrigerated Food Section for..... consecutive issues ($10 per hundred—10c per copy.)

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Enclosed find ☐ Check ☐ P. O. Order ☐ Cash.

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Send sample copies Refrigerated Food Section (no charge) to names given below.

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5-20-31

LARGE DAIRY MARKET OFFERS BIG DEMAND

By C. E. Loman
President, Domestic Utilities

THE magnitude of the market for refrigeration equipment for the dairy has led to developments and simplification of apparatus which enable the refrigeration dealer to better supply the requirements of the dairyman.

It is not generally known how large is the number of producers necessary to maintain the milk supply of the important cities of the country. The milk market of each city is generally referred to as "the milk shed"—the word "shed" denoting the commercial term for the wholesale milk market.

It is from this wholesale market that the various milk distributors, dairies and creameries get their supply of milk. These milk dispensers purchase direct from the various groups of producers.

In view of this, milk production is controlled, prices of milk have been fairly stabilized, and the dairyman today has a nearly fixed income which enables him to forecast his production and to know just about how much money is available for new equipment.

Membership in some of these market groups runs into the thousands. For example, the producers shipping to the Detroit "milk shed" number more than 25,000. The number shipping to the city of Washington, D. C., is about 16,000. There are 21,155 dairy men shipping to the Philadelphia area.

Potential Market for Equipment

This indicates that the potential market for refrigerating equipment in the dairy business is very large. This is particularly true because state laws are being passed requiring the dairyman to refrigerate his milk properly before it is offered for sale.

The various dairy producer groups are built up in about the same way. Often 10 or 15 inspectors are employed, who do nothing but make tests of the products of the various members. It is through these men that pressure is usually brought to bear on the dairyman to improve the quality of his milk, and this usually leads to the purchase of the refrigeration equipment.

The groups are supported by levying a tariff of one to two cents per pound of milk that the producer sells, and the milk distributor or dairy also pays the group from one to two cents per pound for maintaining the quality of the milk up to the highest standard.

Cash producing volume of a group is rated according to milk product during the months of October, November and December, which are the months when milk is most scarce. Production for these three months is called the average and this amount of milk is known as the basic production.

Throughout the remaining 9 months of the year, when milk flow is most liberal, production often doubles. All of this milk above the basic production is known as surplus milk.

To make it a bit clearer, the dairyman's average income from basic milk is $2.95 per 100 pounds, and his surplus milk is sold for $1.65 per 100 pounds.

These figures are arrived at by computation of the retail selling price of basic milk sold to milk distributors or dairies, and the surplus price is controlled by the prevailing price for butter, since most surplus milk is sold to creameries for butter-making.

To get the price of surplus milk for a succeeding month the prevailing price of 92 score butter on the New York market is averaged daily for the month. Then this average price is multiplied by four.

So it can be seen that the result is equitable for both the producer and the creamery since as butter prices increase the prices on surplus milk increase. The balance between the two is maintained and the producer is satisfied. Thus it is clear that the dairyman is in business on a sound basis and always knows just where he stands—what he will make and what he can invest in better equipment.

Premiums for High Grade Milk

There has lately come on the market high grade milk known as grade "A," with requirements that the butterfat must be around 4 per cent, Class "1" grade "A" milk should not have high bacteria count greater than 10,000 and class "2" should not be above 30,000.

In order to obtain this class of milk there is usually a premium paid as high as 40 cents per 100 pounds additional if these requirements can be met.

It might be well to know what the utilities are doing in the rural territories. Electrification is being carried on during 1931 with considerable effort. Line extensions are being made and present rural lines are being tapped at every possible point where they might pick up a load.

In prior years, the cost of these extensions has been prohibitive to the farm owner in that he was required to carry the cost of that particular line extension from the main line to his meter and he was, of course, fortunate if he had a neighbor or two who would split up this cost with him to secure service.

It must be understood that the cost of making a line extension is an important item running on an average of $1,500 a mile and where rocky ground is struck, this cost often jumps as high as $3,000 per mile.

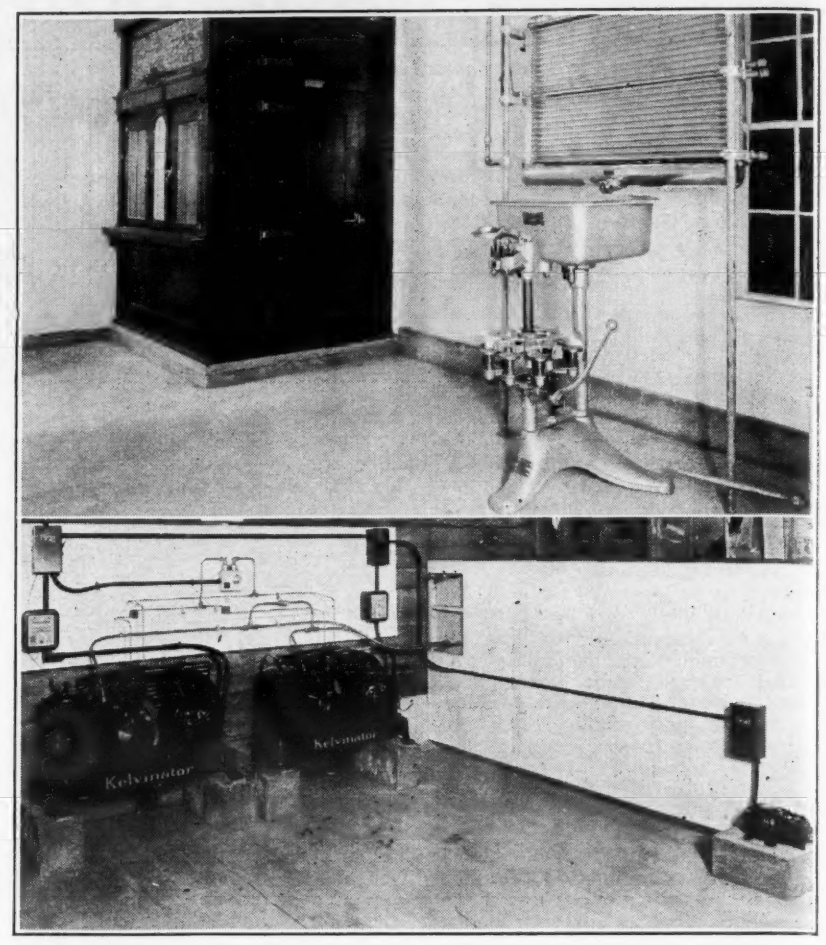
The present plan of making line extensions is on a basis where the particular line will amortize itself over a period of 10 years.

For example, take a line extension of one mile that will cost say $1,500. This line then is to be amortized in 10 years from revenue. Then the cost per year on this line would be $150.

Now, assume that we are picking up four customers on this line. Then each customer will pay his proportional share of the $150 per year which would be $37.50 per year for each customer. By dividing this $37.50 by 12 months, each customer's minimum will be $3.12 per month. This amount is the fixed charge and must be paid regularly whether the customer uses $3.12 of current or not.

In many cases the customer decides to motorize everything possible on the farm so that he can get the full benefit on his minimum charge.

Dairy Farmer Installs System



Stratton & Terstegge, Kelvinator distributor at Louisville, recently installed milk cooling equipment for George G. Jacoby at Greenville, Ind. The equipment consists of cooler with one XO-140 coil and a R-W compressor; one 800-gallon brine tank with circulating pump; 2 R-31 condensing units with 1½ hp. motor on each; two dry system coils made of ⅝ in. copper tubing, using 250 ft in each coil.

FROZEN CUSTARD APPEALS TO SOUTHERN MOTORISTS

MEMPHIS, Tenn.—"Frozen custard," a confection prepared in plain view of the customers, is now being sold here. Cream and milk used in this confection are produced by the dairymen who are members of the Shelby County Milk Producers Association.

A way-side stand called the "Polar Bear," which is constructed to resemble an iceberg is now selling this custard here. It is located near the Fairgrounds, and nearby is plenty of parking space for automobiles. Most of the trade comes from motorists.

Another stand is operated at the William Len Hotel at Main and Monroe Sts. Rowlette Paine, formerly mayor of Memphis, is one of the owners.

Between eight and eleven o'clock at night the rush business begins, and both stands remain open every evening until midnight. On one particular day the "Polar Bear" served 5,000 customers.

NAGLE BUILDING TWO TYPES OF MILK COOLERS

HERKIMER, N. Y.—Milk coolers manufactured by the Nagle Sheet Metal Works of this city are available in two types, expansion and flooded, and in capacities from 2 to 14 cans, according to officials of the company.

The expansion type cooler, known as the Whirlpool milk cooler, using from 48 to 171 ft. of tubing in the various models, is equipped with an agitator for speeding the cooling action. This cooler, officials of the company state, cools milk from 95° to below 50° in about 30 minutes.

Each cooler is constructed of 20 guage Toncan Mo-Lyb-Dum copper galvanized iron, with insulation of 3 in. of corkboard and water proof paper coated with hydrolene cement. Top frame is of 14 guage galvanized iron.

Twenty-four guage Toncan galvanized iron is used in the covers, which are insulated with 2 in. of corkboard.

All models are finished in Brewster green lacquer enamel and the inside shell has one coat of metallic coating.

DAIRY COMPANY COMPLETES PLANT IMPROVEMENTS

DENVER—The Carlson-Fink Dairy Co. has just completed a number of improvements in its plant, including a new cooler room.

A York coil type air conditioning unit has been installed in the milk storage box. Automatic theromstatic control keeps the temperature at 40°.

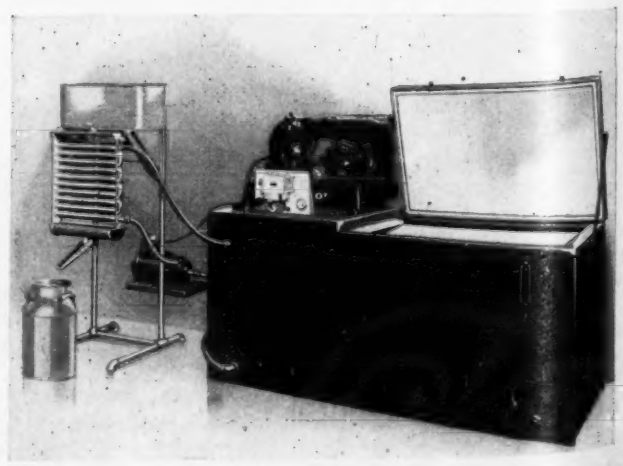
The new cooler room is constructed entirely of tile and plate glass. The air brought in from the roof through a duct is filtered before its gets into the room.

PERCIVAL CO. OPENS BRANCH OFFICE IN DAVENPORT

DES MOINES, Iowa—The C. L. Percival Co. of this city, manufacturer of refrigerator counters and display cases, announces the opening of a new branch offices at 125 Second St. in Davenport.

Self-Contained Cooler Marketed

Reco milk cooler developed by Domestic Utilities for use with Kelvinator refrigeration. The complete unit, cabinet and compressor, is installed as a self-contained job



PROFIT APPEAL BEST FOR DAIRY FARMER

By Henrj Brysselbout
Commercial Engineer
Copeland Sales Co.

PROFIT for the dairy farmer is the sales appeal that enables the electric refrigeration dealer to sell him equipment for cooling milk.

There is an urgent need for cooling equipment for milk as produced by the small dairy farmer who sells from 25 to 40 gallons per day.

His demands are not large enough to warrant the installation of a large amount of refrigerating equipment or coolers and it is to that end that Copeland has worked out plans whereby the farmer may have a suitable tank type cooler installed at a small cost.

In this system a sufficient amount of water is cooled by electric refrigeration to 36° in an insulated tank. Ten gallon cans containing the milk are placed in this tank and cooled by means of the cold water around the cans.

Operation of the condensing unit lowers the temperature of this water and the cans are left in the tank until time to deliver them to the milk company.

This tank is built of a 3 in. layer of corkboard asphalted to the inner galvanized iron tank—or inner concrete tank, if such is used. The outside of the tank can be either concrete or wood.

Several manufacturers are now supplying cooling tanks which adequately do this job. On the other hand, the dairyman frequently decides to build a concrete tank.

The top of the tank is made with a hinged cover 4¼ in. thick, as follows: 1 layer ⅝ in. tongue and groove wood; 1 sheet waterproof paper; 1 layer 3 in. cork; 1 sheet waterproof paper, and 1 layer ⅝ in. tongue and groove wood.

Place 1¼ in. or 1½ in. overflow pipe 24 in. from bottom on inside of tank. It is also suggested that a drain pipe with valve be provided and also a hole 1 in. in diameter to be cut through tank and corkboard insulation 27 in. from bottom of tank. Through the latter are passed the two installation lines and control bulb connecting the cooling coil and the condensing unit.

Upon starting this cooler, it is recommended that the cans be placed in the cooler, then filling tank with water until it reaches overflow pipe. This will determine the amount of water necessary at all times, otherwise, if too much water is added, refrigeration will be required to cool the water which will be wasted when cans are placed in cooler.

Raw milk, as it comes from the cow, has a temperature of 95°. Milk is pasteurized at 145°. In either case the milk should be chilled as quickly as possible to below 50° and kept at that temperature in cold storage until delivered.

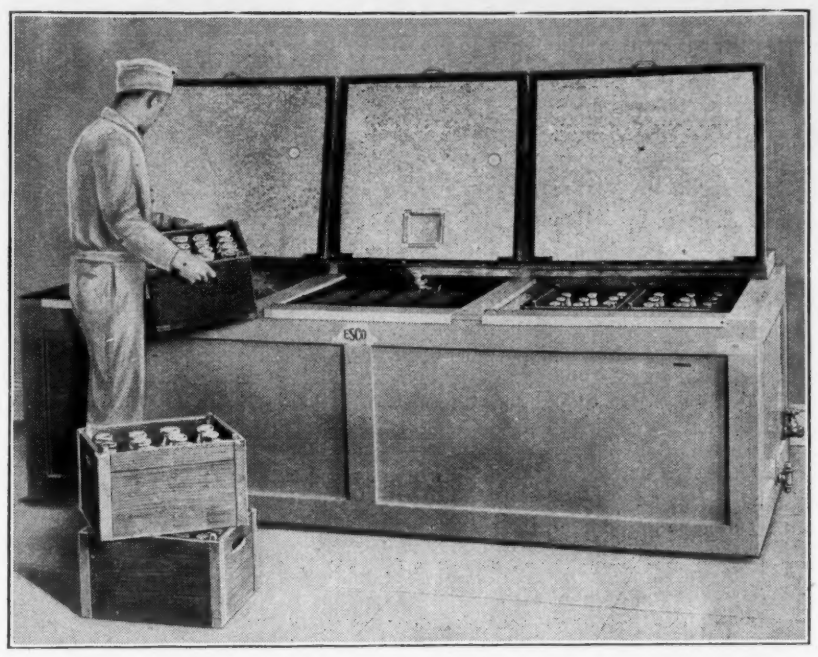
An interesting test was made by the New Hampshire Experiment Station at Durham, N. H., on its three experimental farms regarding the actual cost of cooling milk by mechanical refrigeration and by ice.

In operating costs only, mechanical refrigeration cost only 33 per cent of ice expense on Farm No. 2; 20 per cent as much on Farm No. 4; and 24 per cent as much as Farm No. 1. Taking into consideration operating expense plus all other expenses such as interest on investment, depreciation, etc., mechanical refrigeration on Farm No. 2 cost only 48 per cent of ice; on Farm No. 4, 51 per cent as much and on Farm No. 1, 52 per cent as much.

C. B. Dibble, Copeland dealer at Sidney Center, under B. I. Cooper, Copeland distributor at Syracuse, has made a number of typical installations of Copeland equipment.

"About 75 per cent of our installations of milk coolers have been made in homemade concrete vats either new construction or remodeling the present concrete vat in which the farmer was using ice," states Mr. Dibble in describing his installations."

Cooler for Bottled Milk



New Esco Dry Storage Cooler with Ice Making Compartment.

* * *

Esco Offers Dry Storage Cooler

WEST CHESTER, Pa.—The Esco Cabinet Co. has developed an electric bottle milk cooler designed to meet the requirements of retail milkmen.

The new milk cooler is made in two models, "B" and "BI", and four sizes, each with two dry air, cold storage compartments.

"B" models are not equipped with icemakers while "BI" models have icemaking compartments, so that milk dealers can freeze ice for cracking and placing over the bottles during the delivery period.

The largest size cooler has storage capacity for 24 cases (288 quarts) and a cooling capacity of 48 cases (576 quarts) per day.

A feature of the new bottle milk coolers is that each one is provided with special connections for circulating brine from the brine compartment through the aerator, so that freezing of milk on the aerator is practically eliminated.

UNIVERSAL MILK COOLERS HAVE COIL IN BOTTOM

DETROIT—Mechanically refrigerated milk coolers, employing a large cake of ice built up around the coils, as the cooling agent, are offered by the Universal Cooler Corp. in this city.

The cooling coil laid in the bottom of the milk cabinet is protected by a wooden or metal rack. With the condensing unit in operation, a cake of ice weighing from 300 to 600 lbs., is built up around the coil, so that the ice cools the water in which the cans of milk are placed.

When the cans of warm milk are placed in the cooler, the temperature of the water which is maintained at 34° F., rises to about 36° F. This causes convection currents to set up in the water, the warm water at the top being heavier than that at the bottom flows to ice cake.

This action continues as the cold water from the bottom rises and in turn is warmed by the milk, so that its density and weight increases and it flows to the bottom.

In the tank type cooler the coils are placed around the side walls instead of the bottom. The water comes in contact with the coil as no cake of ice is built up.

DAIRY MEN FAVOR AFTER BREAKFAST MILK DELIVERY

NEW ORLEANS, La.—Members of the advertising and sales council of the Third Division, Southern District, National Association of Retail Milk Dealers met here recently for a two day session during which time proper training of drivers and after breakfast delivery of milk were the principal subjects discussed.

Delegates assembled at the St. Charles Hotel from Tennessee, North Carolina, Texas, Arkansas, Oklahoma, Louisiana, Alabama and other southern states.

Making truck drivers salesmen rather than mere drivers, or peddlers was discussed at length. It was pointed out that drivers in this respect are handicapped by the inconvenient time of day milk is delivered to the homes.

To remedy this it will be necessary to overcome two problems now existing in the industry, it was pointed out. One is the present inability of drivers to sell because they lack training is salesmanship.

In order to be able to sell, the time of day must be changed for deliveries. It is figured that most of the present day supply of milk is delivered before the customers get up every morning, so that drivers rarely see their customers.

After breakfast delivery, it was stated, would remedy this and drivers would come in contact with customers daily. In this way it is believed the consumption of dairy products would be greatly increased for with a little salesmanship the driver possibly can induce Mrs. John Doe to increase her daily pint of sweetmilk to a quart daily.

Then drivers have a chance to sell cottage cheese and other products now mostly sold through creameries and stores.

It was almost the unanimous opinion of delegates that delivering milk before breakfast materially reduced sales.

Members were tendered a luncheon at the Cloverdale Dairy Products Co., Inc., while here and Harry D. Wilson, Louisiana, Commissioner of Agriculture was the principal speaker. His topic was the future of dairying in the South.

UNIQUE SERVEL JOB SOLD IN EVANSVILLE

EVANSVILLE, Ind.—A unique commercial installation has been completed here by the Commercial Division of Servel Sales, Inc., according to W. J. Aulsebrook, commercial sales engineer of that organization. It is an ice cream storage room.

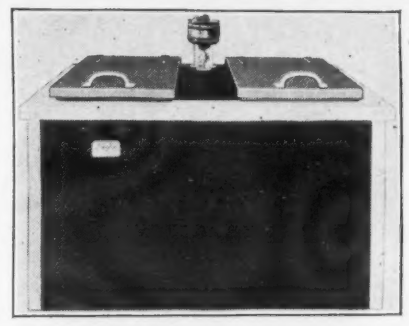
The cream is a special grade made by Holland Custard and Ice Cream, Inc., Holland, Ind., and distributed principally in Evansville and vicinity. This situation necessitated a local storage depot at Evansville to permit delivery of the product without undue losses.

One of the company's most popular desserts is "Holland Custard," a feathery ice cream requiring a temperature of zero or below for proper holding. The cream which is all frozen and hardened at the factory in Holland, is hauled approximately 50 miles by truck in jacketed cans, and then set into the storage room at Evansville.

A model 75A Servel machine with 500 ft. of pipe coil for a low-side, holds the room between zero and five above. Finned coil is not used because the rapid frost accumulation at these temperatures would render it ineffective, Aulsebrook said.

A small anteroom protects the cold room against excessive refrigeration losses, and also serves to store butter and other less perishable products.

The Zero Room, so-called, measures 7 ft. square and 7 ft. wide inside, and is insulated with a 6 in. sheet cork, while the anteroom, measuring 3 by 7 has 3 in. cork insulation. A portion of the pipe coil is placed in the form of shelves, and a total storage capacity of 700 gallons of ice cream is possible by utilizing all available shelf and floor space.



Write for Literature

Nagle Whirlpool Milk Cooler

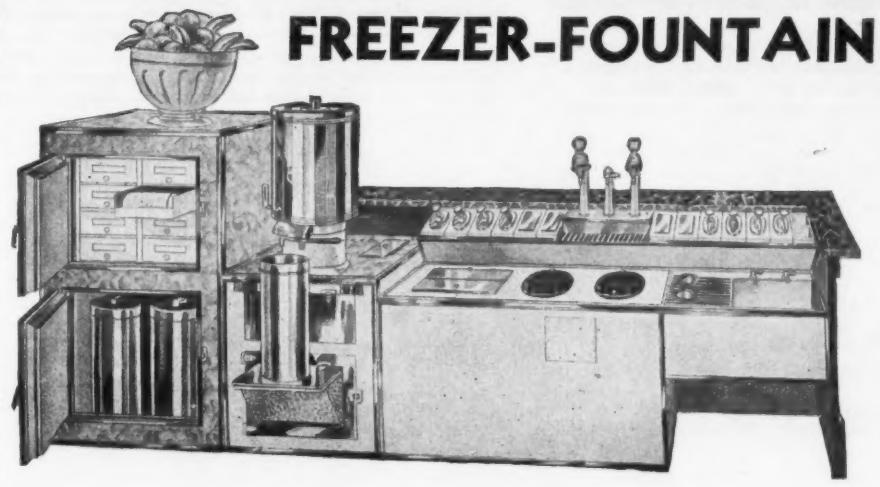
"The Way to Larger Profits"

Reduces the Cooling Time
Furnished with Expansion Coil
Sturdy Construction

We also manufacture beverage coolers

Nagle Sheet Metal Works
Herkimer, N. Y.

The UNIVERSAL Combination FREEZER-FOUNTAIN

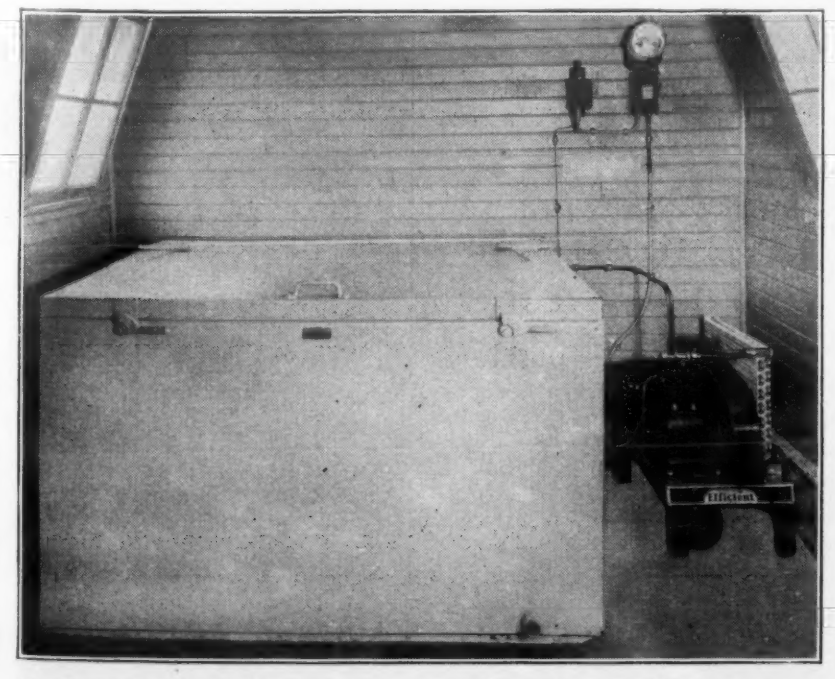


Meets the Demands of Modern Merchandising

This modern combination, as shown above, consists of a 5-Gallon UNIVERSAL Freezer, mounted on a compartment holding 20 gallons of ice cream mix—a storage and hardening cabinet with a capacity for 35 gallons of ice cream in selective packages and bulk and a complete soda fountain. The freezer and cabinet which is 5 ft. long, can be placed at either end of the soda fountain and can be purchased separately, if desired. The stock unit, as shown above, is 12 ft. long, 3 ft. wide and 3 ft. 6 in. high with the exception of the vertical cabinet which is 5 ft. high. The soda fountain, however, can be made any length.

Write for detailed description of this latest addition to the UNIVERSAL LINE —the most complete line of Ice Cream Merchandising Equipment on the market.

THE UNIVERSAL FREEZER CORP.
1113-21 Penn Avenue Pittsburgh, Pa.



Cooling milk on the Chapman Farm near Mt. Clemens, Mich., is a Victor cabinet hooked up to a Copeland unit.

We furnish completely wired control panel for assembly with Kelvinator on Reco in your warehouse. Simply deliver to customer and plug into nearest outlet.

RECO
Electric Dairy Coolers
"The Boiler Steel Cabinet"

Developed for Kelvinator outlets exclusively. The self-contained features of the entire Reco line will cut installation costs and encourage development of your rural territory.

Domestic Utilities
Garrison Blvd. and Western Md. Rwy.
Baltimore, Maryland

'Z' SHOWS PRODUCT TO CHICAGO PACKERS

(*Concluded from Page 1, Column 1*)

however. His eloquent gestures, the light in his face, tell all of that without benefit or necessity of words.

Since 1908 he has been studying and working in the packing industry, largely on refrigeration problems. He will tell you that he has labored in Russia (his birthplace), in Germany, Austria, Italy, France, Belgium, Holland, Sweden, and England. In 1912 he visited the United States.

More than 50 cold storage houses have been built under his direction, he will tell you. Also he has managed the construction of refrigerated railway cars, and at one time was directing refrigerated transportation on the Moscow-Kasan railway.

Packing plants he has managed—large plants, for Europe. They do not begin to compare with American packing houses in magnitude, though, he says.

His system, as has been explained in this section before, utilizes brine vapor, and accomplishes its quick-freezing job at comparatively high temperatures—from 5 to 10° below zero. At these temperatures he can quick-freeze one-half-inch-thick meat cuts in 30 minutes, inch-thick meat cuts in 50 minutes.

He plans to remain in America for several months.

BEVERAGE VENDING UNIT DESIGNED BY IGLOO CORP.

(*Concluded from Page 1, Column 4*)

32 ft. of chrome plated coil forms a conical spiral.

Over the spiral coil, which is impervious to acids, the beverage is circulated in an umbrella shape effect by a small pump driven by a 1/6 hp. motor.

Five gallons of any beverage are in this manner cooled by the direct method in the seven-gallon glass bell jar. The circulating pump is manually controlled.

According to I. G. Konikow, general manager of the manufacturing organization, the cooler is thermostatically controlled so that a temperature from 39° to 45° F. can be maintained. He stated that five gallons of beverage can be cooled from 80° to 39° F. in about an hour and fifteen minutes, with the room temperature around 80° to 90° F.

The base of the dispenser upon which the two jars set on a rubber gasket is made of aluminum castings with porcelain enamel panels. All fittings are of Monel metal.

Within the base compartment the small circulating pump is housed. Four wing nuts which hold the glass containers fast to the base permit the removal of the bowls for cleaning.

Refrigerating the coils in the upper part of the dispenser is a ¼ hp. compressor. The cooler is designed so that it can be hooked up in a multiple installation or individually operated.

The coolers will be sold complete, including compressor, for $370 and $250 without compressor equipment, according to Hamilton.

Headquarters of the distributing organization are at 320 Capitol Theater Bldg., Detroit. S. B. Rosenthal is head of this company.

Present plans call for distribution of the new coolers through branch offices, distributors and dealers.

Officers of Igloo Cooler Corp., the manufacturing company, are: H. Must, president; J. P. Bacher, secretary and treasurer and I. C. Konikow, general manager.

Seven of these dispensers are in operation in the United States at this time, all of them being in Detroit. There are two in the Book Bldg., one being in the Sodette Shop, the other in Rockey's restaurant located in the basement, two in the Dairy Bar of the Detroit Creamery Co., one in the Broadway Market, one in the Kresge store, located at Woodward Ave. and John R., and one in the Sodette Shop on Washington Blvd.

The Sodette Shop reports that whereas they formerly used three quarts of buttermilk per day, they now sell about three gallons. The restaurant in the basement of the Book Bldg. also has increased its sale of buttermilk from two gallons to 10 gallons. The other places using Igloo Coolers also report increases in beverage sales.

'ROOM FOR INDEPENDENTS AND CHAIN STORES' -- SHERRILL

CLEVELAND—Chain stores are not eliminating the efficient independent merchant, Col. C. O. Sherrill, vice president of Kroger Grocery & Baking Co., told members of the Cleveland Advertising Club at their luncheon April 29.

There is room for the independents as well as the chains, he said, comparing opposition to the chains to that which greeted the sewing machine, steam engine, threshing machine and reaper. It is the story of the motor car versus buggy, tractor versus mule, railroad train versus sled.

Progressive merchants have been taught by the chains how to run a successful business instead of the old-fashioned store of 30 years ago, he stated.

Dairy Co. Starts Frozen Orange Juice Campaign

THE DETROIT FREE PRESS—FRIDAY, MAY 15, 1931

¶ PURE, TREE-RIPENED ORANGE JUICE

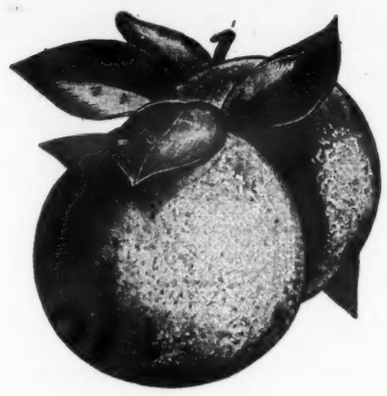
—DIRECT FROM THE GROVES

Coming to Detroit!

Revolutionary as the manufacture of ice

Scientific as the pasteurization of milk

Delivered daily to your doorstep with the milk



UNLESS you have stood in a tropical grove and squeezed full-grown, tree-ripe oranges yourself, you have never tasted *real* orange juice!

The oranges you now buy have been picked before they reached full maturity. If you served their juice to a guest from the orange country, he would know the difference immediately. The flavor is so different! It cannot be compared with juice from oranges that hang on the trees and drink up sweetness and healthfulness until they are heavy globes of natural goodness.

This is* real *orange juice!

For years, efforts have been made to bring you the juice from fresh, tree-ripe oranges. Hundreds of thousands of dollars have been spent, countless methods have been tried. Preservatives have failed. Processes have fallen short of their magic purpose.

It remained for "National Dairy," after many months of scientific experiment and research, to bring forth its revolutionary achievement which now makes it possible for you to enjoy *real* orange juice for the *first* time in your life! It's the most sensational forward step since the transportation of fruits from one section to another began. It marks a new era in the habits—and pleasure—of the nation!

Science now squeezes oranges and freezes juice at the trees—nothing is added, nothing taken away

The scientifically developed quick-freeze process now brings you orange juice at the peak of its delectable flavor. It is *real* orange juice—the first you've ever tasted! Not a new drink, not a mixture of any kind, but the same orange juice you now drink, only riper and richer in health-giving minerals and vitamins, because of extra weeks on the trees in languid sunshine. (One of New York's leading hospitals is feeding "National Dairy" Orange Juice every day to 65 babies.)

"National Dairy" Pure-Orange Juice is squeezed from hand-selected, sound and perfect oranges right in the orange country. The oranges are peeled by specially designed machinery, so accurate in operation that a single soft spot in an orange automatically discards that orange. From the time of this special peeling to the moment you yourself pour out the golden juice, no human hand touches the fruit.

The "cream juice" in an orange is nearest the peel. And it is to preserve the delicate mellowness of this most desirable juice that "National Dairy" peels the oranges rather than squeezing them or crushing them in the ordinary, old-fashioned way.

Four and one-half minutes after it is removed from the fruit, this juice from oranges only a few hours from the trees is frozen under vacuum in the most scientific and sanitary way. *Nothing is added—nothing is removed!* In this convenient modern way, pure, tree-ripe orange juice comes to you.

Beginning Tomorrow—you can have an orange tree right at your doorstep!

"National Dairy" Pure Orange Juice is vacuum-packed in convenient cartons. Just melt the icy-golden contents and drink the marvelous tree-ripe juice! The ideal method is to place the carton in your refrigerator for a full day; here it gradually returns to liquid. 15-oz. size sells for 20 cents. Also to be had in 7-oz. size at 11 cents. Phone your order today! It will be delivered tomorrow to your doorstep by your milkman.

Listen to the National Dairy Radio Program Sunday night at 9:15 over WWJ and associated NBC stations. Countess Albani, mezzo-soprano, guest artist; Alfred Wallenstein conducting.

Detroit Creamery Co.

Telephone: Randolph 4000

Ebling Creamery Co.

Telephone: Madison 2980

DIVISIONS OF NATIONAL DAIRY

The above advertisement is one of a newspaper series announcing the daily delivery of quick-frozen orange juice in Detroit. The beverage is prepared through the quick-freeze process by the National Dairy Products Corp., and is being dispensed by two large divisions of the company.

Census Bureau Compiles Sales Data On Chain and Independent Stores

(*Concluded from Page 1, Column 4*)

in the 485 cities, whose aggregate sales are in excess of $15,000,000,000. The range is from 72 per cent for cities of 10,000 to 30,000 population to 50 per cent for the two cities of over 1,000,000 population which are included.

There is only the slightest variation from this principle of the larger the city the larger the proportion sold by multi-units, when the group averages are considered, either among local multi-units or sectional and national chains.

Small chains of a few local stores, classified as local multi-units, followed single-store independents in importance with nearly 20 per cent of total sales, or nearly one-third as much as single-store independents.

This figure varies from 13 per cent in cities of 10,000 to 30,000, the smallest size of cities reported separately by the Census Bureau, to 29 per cent average for the two cities of over a million population.

A table showing the amount and percentage of sales made through the different types of stores for the 6 populations of cities, based on the 485 cities as stated above, is presented below.

Sectional and national chains account for approximately 17 per cent of total sales, with only 13 per cent of the business in the smallest classification of cities done by this group and 19 per cent in the largest cities. "All other" types of stores account for approximately 1 per cent of the total.

These percentages, being based on only half of the cities of over 10,000 population may possibly be materially changed by the returns not yet available, but they are considered significant, particularly in view of the close correlation between the city and the division of sales between various types of stores.

Cities with Population of	Number of Cities	Total	Single-store Independents	Local Multi-Units	Sectional & National chains	Other
1 Million & over..	2	$3,117,676,415	50.12	29.17	19.02	1.69
250,000 to 1,000,000	15	4,002,587,971	59.44	19.72	19.11	1.73
100,000 to 250,000..	38	1,907,451,211	66.79	15.93	16.73	0.55
50,000 to 100,000...	47	1,708,635,764	66.14	17.03	16.22	0.61
30,000 to 50,000....	64	1,439,578,348	68.51	16.21	14.76	0.52
10,000 to 30,000....	319	2,930,378,538	71.99	14.00	13.16	0.85
Total, cities of less than 1,000,000...	483	11,988,631,832	65.72	16.91	16.34	1.03
Total, all cities...	485	15,106,308,247	62.50	19.44	16.90	1.16

ORANGE JUICE PRICES CHANGED

CLEVELAND, Ohio — Telling-Belle-Vernon Co., division of National Dairy Products Corp., has announced new prices on frozen orange juice delivered to the doorstep through the daily milk delivery system. Pints are 23 cents and half pints are 13 cents.

EIGHT COMMERCIAL JOBS INSTALLED BY TUCKER CO.

BRIDGEPORT, Conn.—A spurt in commercial business is reported by J. E. Logan, commercial manager for the Tucker Machine Co., Kelvinator dealer. In the past few weeks, eight commercial jobs have been installed by the Tucker concern. They are as follows:

Szulc's Market, WR-20 water-cooled compressor with XO-140 coil, to refrigerate a 9x6½x6½ ft. walk-in cooler.

Foland's Dairy, 8-hole combination ice cream cabinet with AFE compressor, and four 2-hole seif-contained cabinets.

Rzybala Market, R-10 compressor with XO-140 coil to refrigerate walk-in cooler of 9x6½x6½ ft.

J. B. Sanford, Redding Station, Conn., R-10 and C-81 Kelvinator compressors to refrigerate a Leonard cabinet and a small walk-in cooler.

L. N. C. Defaranas, S-18 compressor and C-71 coil to refrigerate delicatessen cabinet.

Klein's Kosher Market, WR-20 compressor and X-5140 coil to refrigerate 7x7x7 ft. walk-in cooler.

Two milk-cooling installations were made for the Mitchell Dairy Co., Bridgeport, at farms of the dairy's producers. One, for F. B. Maynard, is of 10-can capacity, with R-30 compressor, while the other, for Irving Adams, provides refrigeration for six cans and is cooled by an F-11 unit.

AMARILLO DEALER NAMED

AMARILLO, Tex.—The Palo Dura Furniture Co. has taken the local agency for the Copeland refrigerator line.

DETROIT MERCHANTS BOOST REFRIGERATION

(*Concluded from Page 1, Column 5*)

cooler. The 140 ft. of McCray top sections, using bases supplied by the Detroit company, serve as display cases.

A large walk-in cooler in the rear of the market completes the refrigeration. This cooler is 25 by 20 by 10 ft. in which all the large cuts are hung. This cooler is refrigerated by a 10 hp. Baker ice machine, while the display counters are cooled by a 3 hp. Baker unit.

David Fuhrer's market, at 10780 Grand River Ave., has a 50 ft. soda bar and lunch counter, as well as a complete line of meats and groceries.

There are two 50 ft. Daemicke display counters for the meat. The temperature of these and the large 12 ft. milk, butter and cheese case on the other side of the store is kept at about 38° F.

The rear of the shop is separated from the front by an 18 by 18 by 10 ft. walk-in cooler where all the large cuts are stored. Located in the basement is another walk-in cooler, 14 by 14 by 8 ft. in which all the sausage and fish are kept.

A Baker ice machine, 7½ hp. cools the display cases, while a 10 hp. Burge machine refrigerates the two walk-in coolers.

The Holbrook market at 15304 Livernois, managed by Tobias Fuhrer, has 70 ft. of Detroit Butchers Supply Co. display cases, and a 12 by 12 by 8 ft. walk-in cooler and a large wall milk cabinet made by the same company. These are all cooled by a 10 hp. Baker ice machine.

The three brothers report that they have not had any trouble with their refrigeration systems outside of minor adjustments shortly after installation.

McCRAY CO. ANNOUNCES TWO NEW DISPLAY CASES

(*Concluded from Page 1, Column 2*)

sulated with 2 ins. of corkboard. The floor has 2 ins. of corkboard, excepting that part under the coil chamber, which has 2 in. of insulation.

Removable porcelain baffles in this model facilitates cleaning of the display compartment and coil chamber.

The other addition of the line is Model P-3210 which has both display and storage compartments. This model, built for machine refrigeration only, has front, ends, and top of white porcelain, with walls approximately 5 ins. in thickness. Four inches of corkboard sealed in hydrolene are used in the walls.

Coil space of 9½ ins. is allowed in each end of this model. The entire case is cooled by the same coils in the ends as there is no partition between the display and storage sections.

Both of the new models have black porcelain bases.

NEW AUTOMATIC GROCERY VENDS TEN CENT ITEMS

(*Concluded from Page 1, Column 5*)

ed compartment, allowing the purchaser to remove the item wanted. When the shutter is below the last compartment, the coin slot leading to that tier automatically closes.

The cabinet of this machine is of birch finished in dark walnut. Merchandise compartments, panels and sliding shutters are made of heavy gauge steel.

According to officials of the company, the machine is designed primarily for such items as do not need refrigeration.

RHODE ISLAND HOSPITAL BUYS REFRIGERATOR

PROVIDENCE, R. I.—A General Electric S-62 refrigerator was recently purchased by the Rhode Island Hospital from Gentsch & Thompson, Inc., local G-E distributor.

Another S-62 G-E refrigerator was sold to the Rumford Baking Co. to be installed in its chemical laboratory.

SOUTHERN INDEPENDENT CHAIN HAS 233 MEMBERS

NEW ORLEANS, La.—Two hundred and thirty-three retail grocer members and 22 local jobbers have joined the Independent Food Dealers of New Orleans, a voluntary chain organized in Sept., 1930.

Jobbers are requested to pay $25 per month organization dues on a one-year contract, and retailers pay $5 per month. Radio broadcasts twice a week, weekly stories and copy in all New Orleans newspapers, classes for retailers, a field man to call on retailers and promote their business and other publicity stunts such as contests, etc., are included in the organization's program.

Twenty-eight members have taken advantage of the services of the association's field man, under whose direction two stores have been completely remodelled, and 26 are in process.

Convention Report Number

Engineering Section

In Three Parts Part Three

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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DETROIT, MICHIGAN, MAY 20, 1931

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TWO DOLLARS PER YEAR

ENGINEERS EXCHANGE REFRIGERATION IDEAS IN THREE-DAY CONVENTION AT KANSAS CITY

Fraternal Spirit Manifest In Festivities At Conclave

By George F. Taubeneck

KANSAS CITY, Mo.—Enjoying hugely the facilities for recreation and good fellowship provided by E. M. Dodds and his committee, some 160 refrigerating engineers and their wives renewed friendships and exchanged ideas here May 6, 7, and 8. Social events included a luncheon, tour of Kansas City, a theater party for women and stag party for men Wednesday; a ladies' luncheon and bridge, a mens' golf tournament, and a "Club Frigid" banquet and dance Thursday; and a special inspection trip through Kansas City industrial plants Friday.

The high spot of the three-day gathering was the formal opening (and closing) of the "Club Frigid" Thursday night.

Beginning with a multi-course banquet, which the chef of the Kansas City Athletic Club claimed was the peak of his life's culinary achievement, the crowd witnessed a number of dancing acts, laughed with and at a vest-pocket-size master of ceremonies, heard Helen Enright sing some of the songs which brought her fame in "Rose Marie," and danced until morning was well started on the path to dayhood.

A particularly attractive and well-dressed group of engineers' wives graced the occasion. For those who came unattended, there were some 40 Kansas City girls, selected and provided by Chairman Dodds and his committee.

Notwithstanding this supply of hostesses, there was a surplus of men present. Hence the southern custom of a stag line and "tag" dancing was introduced, and met with general approval. Everybody "cut in" on everybody else, with the result that all present did plenty of dancing before the evening was over.

So much handclasping, back-slapping and hearty laughing was done at the welcoming luncheon Wednesday noon that the affair resembled an alumni reunion and a semi-annual meeting of the Mutual Admiration Society rolled into one.

Engineers who hadn't seen one another for months and perhaps years,

(*Concluded on Page 2, Column 4*)

Majestic Production Up to 1,000 Daily

CHICAGO, May 19—Production of Majestic refrigerators was increased today to 1,000 daily, according to Don M. Compton, vice president and general manager.

"We have been manufacturing 750 refrigerators daily for some time," said Mr. Compton, "but starting today the number will be 1,000 per day, and by June 1 the manufacturing division is confident it will be turning out 1,500 daily."

Technical Session Papers Arouse Long Discussions

By John T. Schaefer

KANSAS CITY, Mo.—Refrigerating engineers from all over the land gathered here, May 6, 7, and 8 to hear about recent developments, and to discuss current problems with their brothers of the engineering fraternity, at the 18th annual western meeting of the American Society of Refrigerating Engineers. The Kansas City Athletic Club, headquarters for the convention, provided room and dining facilities for the entire aggregation of approximately 160 delegates.

Technical sessions were held each morning in the roof garden, where well-informed speakers discussed the refrigeration aspects of air conditioning, oil refining, insulations, solid carbon dioxide, and other subjects of interest to the refrigerating engineer. Long discussions generally followed the meetings. A tour of the city, a golf tournament, inspection trips to local industrial plants, and convivial hotel-room meetings throughout the athletic club occupied the afternoons.

The events provided three days "off-duty" for the engineering profession of the industry, and the technicians enjoyed all interchange of experiences and the arguments that will arise among a group of active minds.

Among the speakers were the following: Harris Pruitt, chief engineer of the Texas Pacific Coal and Oil Co.; Maurice Olchoff of the Natkin Engineering Co.; A. W. Archer of Archer & Radotinsky; R. H. Tait, consulting engineer; A. L. Mullergren, consulting engineer; J. L. Knight of General Electric; D. P. Heath, consulting engineer; T. W. Carraway of Schwitzer-Cummins Co.; H. J. Krampe of Armstrong Cork Co.; C. H. Tanger of Servel; J. C. Irwin, Jr. of the U. S. Cold Storage Co.; Dana Burks of the University of Illinois; G. R. Pearce of Dry-Zero, and Paul Scates of the University of Tennessee. Reports of the talks are given elsewhere in this issue.

The ranking officers of the society presided over the three engineering sessions, A. H. Baer, president, and Glenn Muffly and A. W. Oakley, vice presidents. In the Friday morning session, Mr. Oakley read a resolution in honor of the late Prof. A. J. Wood, former president of the society.

Official business transacted by the society included the establishment of a

(*Concluded on Page 2, Column 1*)

Parliament of Representative Minds

Engineers from General Electric, Frigidaire, Kelvinator, Copeland, Servel, and Majestic gathered at Kansas City to compare notes and relate experiences. Standing, left to right, are J. L. Knight (General Electric), H. W. McPherson (Majestic), John Wyllie (Kelvinator), and Harry Williams (Frigidaire). Seated are C. H. Tanger (Servel), and Glenn Muffly (Copeland). Impromptu discussions of this nature were held at all hours.

LIQUID COOLER INTRODUCES DOMESTIC COOLING UNIT

DETROIT—Small water cooling units that can be operated from the condensing unit of any standard domestic electric refrigerator using pressure control, have been introduced by the Liquid Cooler Corp. of this city. The cooler has been designed for installations where a capacity of four gallons per hour is sufficient, according to Ray Douglas, advertising manager of the company.

It is adaptable to a kitchen or office, he pointed out, by providing a niche in the wall for the cooling unit, and running the liquid and suction lines from the domestic unit over to it, and connecting the city water mains to the feed. The new cooler will also have some application in hotel and yacht cooling, and for small bottle coolers and beverage cooling, he believes.

The unit has the standard temperature control used on all Liquid Cooler equipment, and will serve its 2½ quarts of storage capacity at a temperature of 45° F. All surfaces of its brass shell that will contact the water are tin plated, Mr. Douglas said. Its refrigerant capacity is approximately 3.5 lbs. of methyl chloride, or 3 lbs. of sulphur dioxide. An open bucket type of float valves regulates the refrigerant flow.

FERRO PRESIDENT DIES

CLEVELAND, Ohio—Harry D. Cushman, 57, president and founder of the Ferro Enameling Corp., died recently at his residence, Ridge Road, Willoughby.

Complete Reports of Convention Speeches In This Issue

TO GIVE refrigerating engineers who were unable to attend the A.S.R.E. convention at Kansas City the benefit of the ideas introduced and the discussions provoked by the speakers, full reports of the papers read are given in the following pages of this section. These reports were made from notes taken at the sessions (and checked by the speakers) by John T. Schaefer, engineering editor, and George F. Taubeneck, editor of Electric Refrigeration News. The reports are as follows:

"Refrigeration Requirements for Oil Refining," by Harris Pruitt, chief engineer, Texas Pacific Coal and Oil Co., Fort Worth, Tex., Page 4, Column 4. "Refrigeration in Air Conditioning," by Maurice Olchoff, Natkin Engineering Co., Kansas City, Page 6, Column 1. "Bakery Refrigeration—Some Observations," by A. W. Archer, Kansas City architect, Page 15, Column 4. "Design of Drinking Water Systems," by R. H. Tait, consulting engineer, St. Louis, Page 10, Column 1. "Management Control of Large Groups of Ice Plants," by A. L. Mullergren, consulting engineer, Kansas City, Page 5, Column 1. "Paper as a Refrigerator Insulation," by J. L. Knight, General Electric Co., Erie, Pa., Page 14, Column 4. "Design of Refrigerator Evaporators," by D. P. Heath, consulting engineer, Detroit, Page 14, Column 1. "Control of Brines and Refrigerants," by T. W. Carraway, Schwitzer-Cummins Co., Indianapolis, Page 13, Column 1. "Insulated Cold Rooms Used in Various Industries," by Hugh H. Krampe, Armstrong Cork Co., Lancaster, Pa., Page 16, Column 2. "The Noise Problem in Compressors," by C. H. Tanger, Servel Corp., Evansville, Ind., Page 9, Column 1.

"Chemistry in Food Freezing and Storage," by J. C. Irwin, Jr., U. S. Cold Storage Co., Atlanta, Ga., Page 4, Column 5. "The Chemistry of Water Treatment," by Dana Burks, Jr., University of Illinois, Urbana, Ill., Page 7, Column 5. "Economics of Carbon Dioxide Solidification," by G. T. Pearce, engineer in charge of sales, Dry-Zero Corp., Chicago, Page 9, Column 4. "Factors Affecting Ice Melting Rates," by Paul Scates, University of Tennessee, Knoxville, Page 14, Column 3.

APEX REGULATOR TO SELL SMALL EXPANSION VALVE

DETROIT—A new small expansion valve has been introduced by the Apex Regulator Co. of Marshalltown, Ia., a division of the Fisher Governor Co., according to an announcement from W. H. Mark Hanna, in the General Motors Building, who handles the valve here.

The valve is to be known as class EXD, he said. It is intended for service on all refrigerants which are not corrosive to bronze. He claims that it has a range of adjustment that will provide regulation for any vacuum or pressure encountered in domestic refrigerators.

A single screw permits adjustment of either vacuum or pressure on the discharge side, he pointed out. A novel feature of the valve, he showed, was the fact that it uses only one spring in the adjusting mechanism, and that

(*Concluded on Page 2, Column 5*)

KINTNER PLACED IN CHARGE OF WESTINGHOUSE ENGINEERS

EAST PITTSBURGH—S. M. Kintner, who has been assistant vice president of the Westinghouse Electric and Manufacturing Co., was elected vice president in charge of engineering for that company by the board of directors, April 29. He succeeds W. S. Rugg, who has been named vice president in charge of sales.

LOS ANGELES GROUP FORMS ASRE SECTION

(*Concluded from Page 1, Column 5*)

new section in Los Angeles, consideration of a section in Kansas City, detailed revisions of the constitution, and a decision to publish a "Refrigerating Data Book and Catalog" annually for three years.

Committees are now being formed to prepare various sections of the handbook, which will correlate authoritative refrigeration data in the first publication of its kind in the industry. The handbook will treat air conditioning, food preservation, refrigerants, brines, and the various classes and parts of industrial and domestic refrigerating systems, D. L. Fiske, executive secretary, announced. An editor-in-chief is to be secured, and prominent engineers appointed to prepare various sections of the handbook.

Attention was called to the coming meeting of the society, January 26 to 29 in the Hotel Cleveland, Cleveland, one session of which will be held with the A. S. H. V. E. on January 27, to consider common problems of air conditioning. The heating and ventilating engineers will meet the same week, with headquarters at the Statler Hotel.

Mr. Muffly is chairman of the program committee of the A. S. R. E. and making plans for the meeting. D. F. Eith of the Perfection Stove Co. will be in charge of local arrangements in Cleveland.

CONVENTION DELEGATES

Those who registered for the sessions were:

R. W. Ayres, General Electric Co., Schenectady, N. Y.; A. W. Archer, Kansas City, Mo.; O. A. Andersen, Armour & Co., Chicago, Ill.; N. Baraban, Copeland Sales Co., Kansas City, Mo.; C. A. Brinckmann, St. Louis, Mo.; W. J. Bray, General Electric Co., Chicago, Ill.; F. V. Becklean, York Ice Machinery Corp., Kansas City, Mo.; S. C. Bloom, Chicago, Ill.; Dana Burks, University of Illinois, Champaign, Ill.

Geo. B. Bright, Detroit, Mich.; A. H. Baer, Waynesboro, Pa.; I. J. Bush, Kansas City, Mo.; C. T. Baker, Atlanta, Ga.; Harry D. Betz, Kansas City, Mo.; Loren Brintnall, C. J. Paterson Co., Kansas City, Mo.; P. E. Conrades, St. Louis, Mo.; C. W. Cutler, General Electric Co., Chicago, Ill.; Thos W. Carraway, Schweitzer Cummins Co., Indianapolis, Ind.; Thos. Coyle, Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y.; Don Cooper, Frigidaire Sales Corp., Kansas City, Mo.; Arthur E. Cole, McCord Radiator Co., Detroit, Mich.; C. C. Coulter, Peoria, Ill.

C. M. Cory, Creamery Package Co., Kansas City, Mo.; E. K. Campbell, Campbell Co., Kansas City, Mo.; J. P. Calderwood, Manhattan, Kans.; A. T. Cushing, United States Dairy Association, Kansas City, Mo.; Wm. F. Cox, Crane Co., Kansas City, Mo.; P. T. Devin, Kansas City, Mo.; D. DeRoulet, Commonwealth Edison Co., Chicago, Ill.; A. P. Dougherty, Niles, Ohio; E. M. Dodds, United States Cold Storage Co., Kansas City, Mo.; L. E. Evans, General Electric Co., Kansas City, Mo.

W. H. Ferguson, Kansas City, Mo.; David L. Fiske, American Society of Refrigerating Engineers, New York City; Fred Farr, Philadelphia; H. T. Fisher, Shawnee, Okla.; P. J. Forsyth, Wagner Electric Co., Cincinnati, Ohio; A. W. Finke, St. Louis, Mo.; H. L. Filkins City Ice Co., Kansas City, Mo.; Crosby Field, Flakeice Co., New York City; H. O. Forrest, M. W. Kellogg Co., New York City; F. M. Fuller, Jamison Cold Storage Door Co., Hagerstown, Md.

H. C. Garrison, Johns-Manville Co., St. Louis, Mo.; E. W. Gallenkamp, York Ice Machinery Corp., Chicago, Ill.; Herbert George, Wood Conversion Co., Chicago, Ill.; Arthur Groesbeck, Manhattan, Kans.; E. C. Grayson, Western Fruit Express Co., St. Paul, Minn.; Arnold H. Goelz, Brunswick-Kroeschell Co., Chicago, Ill.; B. J. George, Kansas City Power & Light Co., Kansas City, Mo.; E. M. Holcombe, Carbondale Machine Co., Carbondale, Pa.; George Hilger, Chicago, Ill.; H. H. Hayward, Kansas City, Mo.; C. H. Hall, Johns-Manville Co., New York City; D. P. Heath, Detroit, Mich.; R. M. Hyde, McCord Radiator Co., Detroit, Mich.; J. F. Hail, Vilter Manufacturing Co., Milwaukee, Wis.; J. C. Heslip, National Air Control Co., Kansas City, Mo.; Herman C. Henrici, Kansas City, Mo.

Fred W. Hodson, Johns-Manville Co. St. Louis, Mo.; H. K. Ireland, United States Cold Storage Co., Kansas City, Mo.; Fay Jarvis, Johns-ManvilleCo., Kansas City, Mo.; J. F. Jakowicz, Port Arthur, Texas; R. O. Jackson, Rolla, Mo.; J. O. Johnson, Creamery Package Co., Kansas City, Mo.; F. E. Johnson, National Air Control Co., Kansas City, Mo.; J. C. Irwin, United States Cold Storage Co., Atlanta, Ga.

H. J. Kipp, R. H. Tait & Sons, St. Louis, Mo.; W. J. King, General Electric Co., Schenectady, N. Y.; B. R. King, Frigidaire Corp., Dayton, Ohio; I. J. Knudson, Chicago, Ill.; A. E. Knapp, Kelvinator Corp., Detroit, Mich.; Geo. M. Kleucker, St. Louis, Mo.; J. L. Knight, General Electric Co., Erie, Pa.; Hugh J. Krampe, Armstrong Cork & Insulation Co., Lancaster, Pa.

F. E. Kidney, Kansas City, Mo.; W. V. Lewis, Raiway Ice Co., Kansas City, Mo.; Samuel E. Link, Kansas City, Mo.; H. W. McPherson, Chicago, Ill.; Fred McCandlish, Chicago, Ill.; R. A. McMaster, United States Cold Storage Co., Kansas City, Mo.; Dr. S. M. Major, Kansas City, Mo.; D. W. McKay, Tulsa, Okla.; E. G. Morgan, Vilter Manufacturing Co., Kansas City, Mo.

A. G. Matoussek, Omaha, Nebr.; A. E. Magher, Carbondale Machine Co., Chicago, Ill.; Norvell Martin, St. Louis, Mo.; Albert Maillard, Kansas City Power & Light Co., Kansas City, Mo.; A. L. Mullergren, Kansas City, Mo.; L. T. Mart, Warley Co., Kansas City, Mo.; Glenn Muffly, Copeland Sales Co., Mt. Clemens, Mich.; E. L. Martin, Liquid Carbonic Co., Kansas City, Mo.; Ben Natkin, Natkin Engineering Co., Kansas City, Mo.; E. N. Northey, Herrick Refrigerator Co., Waterloo, Ia.; H. Nottberg, United States Engineering Co., Kansas City, Mo.

W. F. Otis, Kansas City, Mo.; Alfred W. Oakley, New York City; Maurice Olchoff, Natkin Engineering Co., Kansas City, Mo.; Harris Pruitt, Texas Pacific Oil Co., Ft. Worth, Tex.; C. E. Pehl, National Air Control Co., Kansas City, Mo.; R. N. Platts, Kansas City, Mo.; Gayle G. Pearce, Dry Zero Corp., Chicago, Ill.; T. Pellmouter, Century Electric Co., Kansas City, Mo.; B. F. Qualthrough, Carbondale Machine Co., Kansas City, Mo.; E. R. Reddington, Kansas City, Mo.; W. M. Robinson, Baker Ice Machine Co., Kansas City, Mo.

J. C. Rust, Frick Co., Kansas City, Mo.; M. Rypinski, Wagoner Electric Corp., Kansas City, Mo.; Chas. S. Ross, Kansas City, Mo.; Ed. G. Sullivan, Amarillo, Tex.; B. B. Shaw, Wood Conversion Co., Chicago, Ill.; S. J. Shure, Natkin Engineering Co., Kansas City, Mo.; H. P. Spoehrer, Alco Valve Co., St. Louis, Mo.; Harry Sloan, Vilter Manufacturing Co., Milwaukee, Wis.; E. J. Seener, Kansas City, Mo.; Paul W. Scates, University of Tenn., Knoxville, Tenn.; R. W. Strombar, Kansas City Power & Light Co., Kansas City, Mo.

E. L. Stultz, Viking Refrigerator Co., Kansas City, Mo.; J. T. Schaefer, Electric Refrigeration News, Detroit, Mich.; Stanley Seibel, Kansas City, Mo.; T. G. Storay, Kansas City, Mo.; Clifton B. Sloan, Kansas City, Mo.; C. H. Tanger, Servel Sales, Inc., Evansville, Ind.; R. H. Tait, St. Louis, Mo.

H. L. Trask, United States Cold Storage Co., Kansas City, Mo.; Geo. F. Taubeneck, Electric Refrigeration News, Detroit, Mich.; F. H. Turner, Streator Products Co., Kansas City, Mo.; A. E. Voigt, Topeka, Kans.; Gus Werner, Kansas City, Mo.; C. E. Wight, Kelvinator Sales Co., Kansas City, Mo.; M. D. Woodling, Kansas City, Mo.; John Wylie, Kelvinator Corp., Detroit, Mich.; W. O. Widener, Kansas City, Mo.; Thomas Wilson, "Power," Chicago, Ill.; H. M. Williams, Frigidaire Corp., Dayton, Ohio; E. R. Woodward, Barrett Co., New York City; Chas. A. Zilker, San Antonio, Texas.

Women attending were:

Mrs. Geo. B. Bright, Detroit Mich.; Mrs. Grace S. Dodds, Kansas City, Mo.; Mrs. D. DeRoulet, Chicago, Ill.; Mrs. E. M. Dodds, Kansas City, Mo.; Mrs. L. W. Evans, Kansas City, Mo.; Mrs. H. T. Fisher, Shawnee, Okla.; Mrs. Arthur Groesbeck, Manhattan, Kans.; Mrs. E. C. Grayson, St. Paul, Minn.; Mrs. E. G. Morgan, Kansas City, Mo.

Mrs. Glenn Muffly, Richmond, Mich.; Mrs. E . N. Northey, Waterloo, Ia.; Mrs. M. Olchoff, Kansas City, Mo.; Mrs. S. J. Shure, Kansas City, Mo.; Mrs. C. H. Tanger, Evansville, Ind.; Mrs. H. L. Trask, Kansas City, Mo.; Miss Edna Weiss, Springfield, Mo.; Miss Sally Townsend, Kansas City, Mo.

"Chief Engineer"

A. H. Baer, president of the A. S. R. E. directed convention activities.

Refrigerating Engineers, Wives Enjoy Luncheons, Theatre, Golf

(*Concluded from Page 1, Column 1*)

got together again and reminisced, told each other confidentially about the new schemes they had up their sleeves, or (if they had been to New York City recently) mourned and shook their heads gloomily over the "hard winter ahead."

Other engineers found men they had been wanting to meet for a long time, and proceeded to establish felicitous relationships.

E. M. Dodds, chairman of the convention committee, presided as toastmaster at this luncheon, and introduced Dr. Hamilton P. Cady of the University of Kansas (see story on page 5, Column 2 of this section). Dr. Cady spiced his demonstration of liquid air with a liberal sprinkling of dry wit. (Example: After using his liquid air to freeze some alcohol, he observed that here, surely, was "hard liquor.")

In the afternoon several parties of visiting engineers were bundled into taxicabs and taken for a long tour of Greater Kansas City (see "An Editor on Wheels," page 8, column 4 of this section).

Jane Cowl and Leon Quartermaine made Shakespeare's "Twelfth Night" uproariously funny Wednesday night at a special theater party for the wives brought along to the convention. Mrs. E. M. Dodds squired the party to the theater where Miss Cowl held forth.

While their wives were laughing at the predicaments into which Jane Cowl was thrown by masquerading as a boy, the engineers were being entertained by a kaleidoscopic succession of wrestling matches, acrobatic dancers, 12-ounce glove fights, and blues singers, topped off by a barrel fight and a colored battle royal—all presented in the Kansas City Athletic Club gymnasium.

Plate lunches and schooners of legal percentage beer were served. It was a good, old-fashioned, he-man's party.

Most popular among the events on the program—judging by the applause—were a middleweight wrestling match in which the contestants did everything but bite ears, a lightweight boxer who rained gloves in all directions (like Windmill Harry Greb used to do) and refused to stop for the bell, a hula dancer who rose to heights of positive brilliancy in her art, the barrel fight, and the battle royal.

Two colored boys—one lanky and grinny, and the other stubby and serious—participated in the barrel fight. Each was placed in a barrel within easy swinging distance of the other. The man with the most knockdowns to his credit was supposed to win, but the judges lost track of the count somewhere in the thirties.

Five colored urchins, labeled Baer, Muffly, Oakley, Dobbs, and Fiske, were thrown together in a ring for the battle royal. The fight soon narrowed down to the standard-bearers of Muffly and Fiske, who pummeled each other generously until "Muffly" was declared the winner.

Thursday afternoon the women guests played bridge, while the so-called golfers present journeyed to the Indian Hills Country Club, to engage in a championship tournament.

R. W. Ayres, General Electric representative from Schenectady, won a golf bag and the tourney with a score of 102. Other scores ranged from 103 to 151, with all scheduled stops in between (see report on page 7, column 1).

Examination of the commercial absorption machine developed by E. R. Schurtz of Kansas City was the feature of the inspection trip made Friday afternoon.

Recreational facilities of the Kansas City Athletic Club were at the disposal of the engineers. Open house was maintained at all hours in suite provided by R. M. Hyde of the McCord Radiator & Mfg. Co., who had a new ice cube tray of novel design to demonstrate.

APEX REGULATOR TO SELL SMALL EXPANSION VALVE

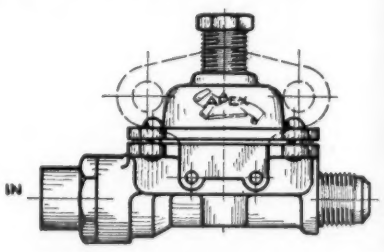
(*Concluded from Page 1, Column 5*)

spring is kept out of contact with the refrigerant.

A special toggle mechanism is used for transmitting the bellows motion to the valve. The motion of the bellows, and the force due to the changing vacuum or pressure, is applied to the center of this flexible flat spring. The flexing of the spring results in the valve being removed from its seat, or forced to the seat.

The body is a bronze forging, all joints coming in contact with the refrigerant being soldered.

All the springs, and adjusting mechanism are contained in a sealed case inside the bellows. All parts are lubricated with a non-freezing lubricant which also serves to seal the valve against moisture. Exposed parts of the new valve are plated with a coating of electro-tin plate.



New Apex Expansion Valve

The unit weighs less than 1 lb., Mr. Hanna said, and can be furnished either with a bracket for rigid mounting, or it can be secured to the refrigerator directly.

GIBSON NAMES H. L. SMITH AS SERVICE ENGINEER

GREENVILLE, Mich.—H. L. Smith has been named service engineer of the Gibson Electric Refrigerator Corp. here, to have charge of training the Gibson service men throughout the country.

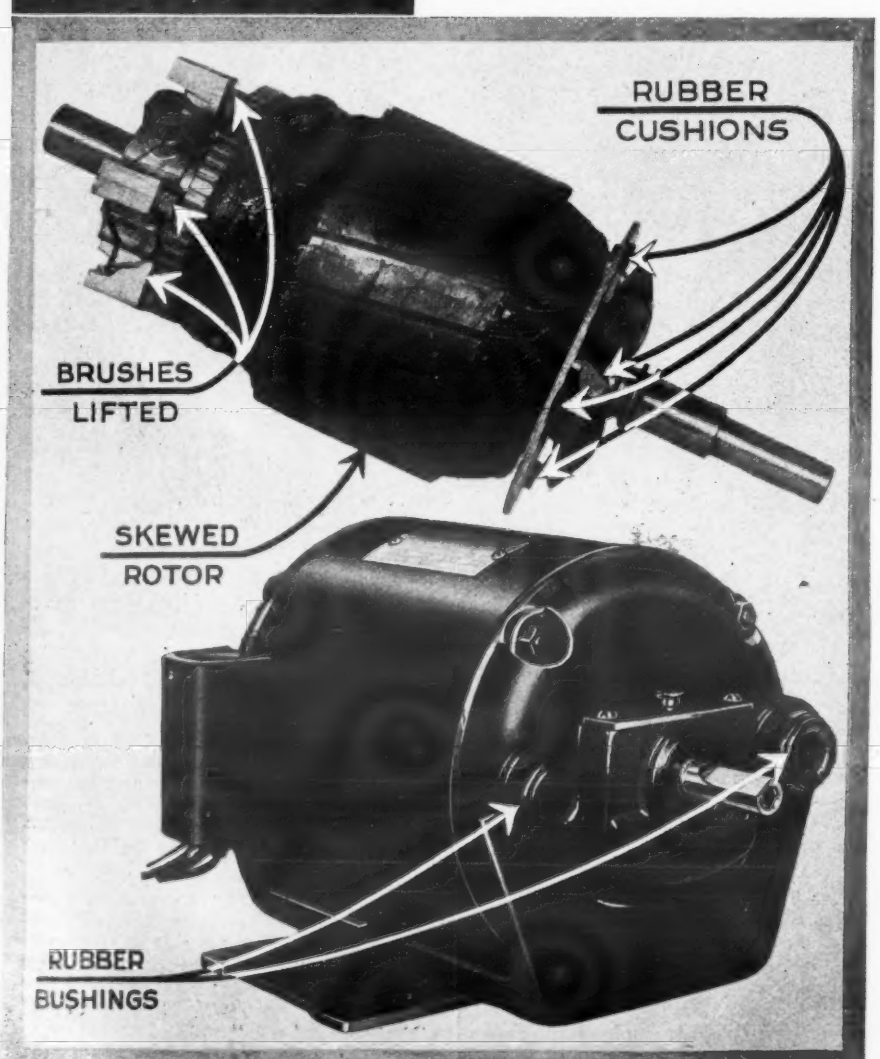
Mr. Smith was formerly in charge of service at the Cleveland branch of the Kelvinator Corp., and previously spent several years as service manager and sales engineer of the Des Moines branch of the Frigidaire Corp.

ST. LOUIS ZEROZONE CO. FINDS 24-HOUR SERVICE AIDS SALES

ST. LOUIS—Operation of a 24-hour service and installation department, seven days a week, is responsible for the friendly customer relations of the Zerozone St. Louis Co., Inc., in the opinion of its president, Henry Weis, Jr. This company recently installed Zerozones in 54 engine houses in this city, he reported; its sales last year were three times 1929 sales.

Effectively silenced

Wagner refrigerator motors are effectively silenced. » » » The motor frame is insulated from the base by means of rubber bushings which absorb electrical and mechanical vibrations. » » » Governor weights are rubber-cushioned to prevent clicking when actuated into running and starting positions. » » » The brush-lifting mechanism (originally developed by Wagner over thirty years ago) prevents objectionable brush and commutator noise. » » » The rotor is skewed to insure freedom from magnetic noise, and is dynamically balanced to reduce mechanical vibration to the lowest minimum. » » » Wagner's method of silencing motors is one of the reasons why Wagner motors are so widely preferred and adopted by the electric refrigeration industry.



Wagner Electric Corporation
6400 Plymouth Ave., St. Louis, U. S. A.
Motors Transformers Fans
Lockheed Hydraulic Brakes
S531-4YA

Rx

Has your Refrigerating Plant any of the following Symptoms?

1 Are some of your coils without frost?

2 Does frost accumulate on suction line back to compression?

3 Does your machine labor hard, and is it noisy when first started?

4 Do you have difficulty in maintaining desired temperatures?

5 Does your ice machine run longer than it should?

Check your plant, if it shows any of the above symptoms it is not as efficient as it should be. The Alco Liquid Control Valve will eliminate any or all of these troubles. Consult a competent engineer or write us for details.

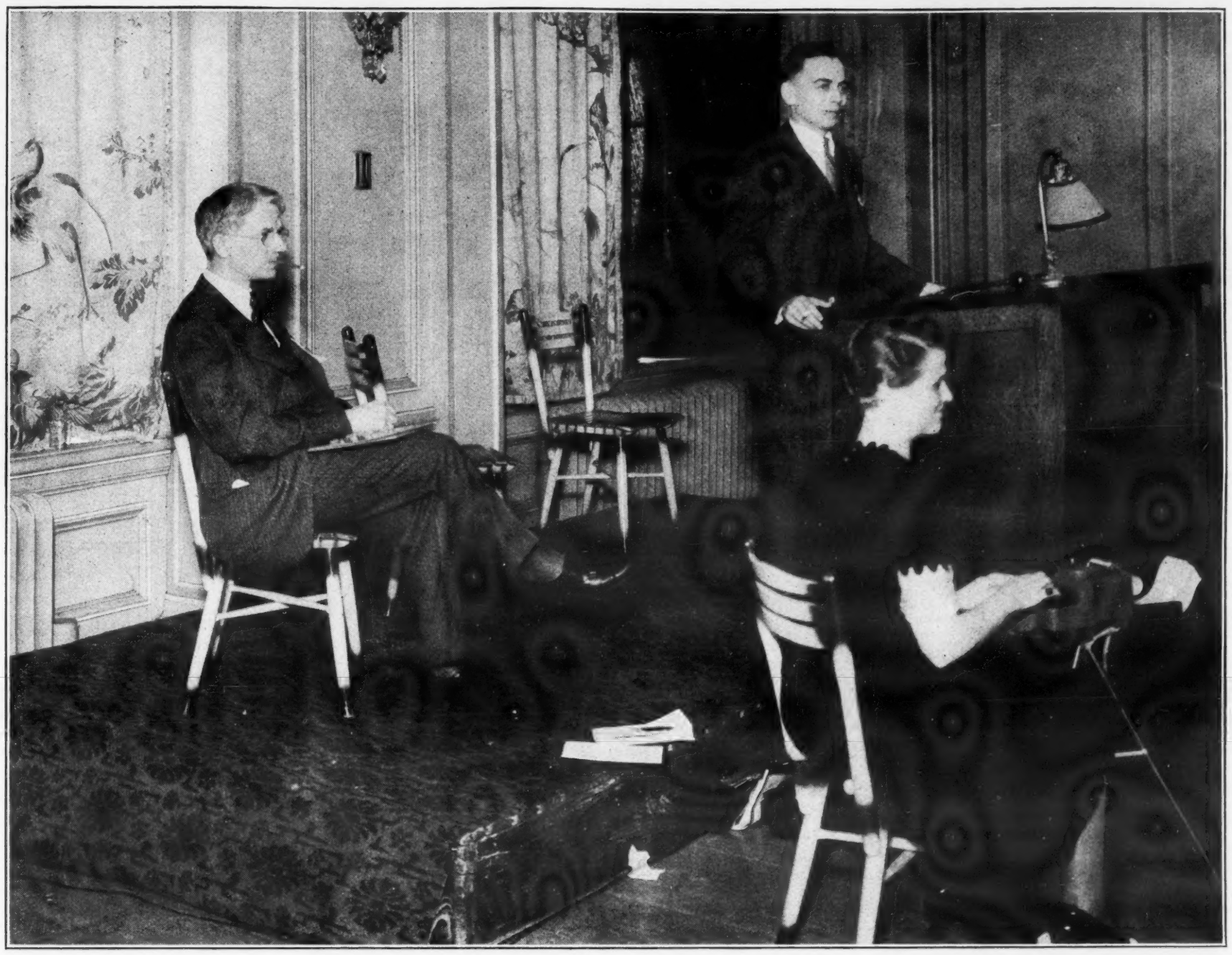
ALCO VALVE COMPANY, INC.
Factory: 2636 Big Bend Blvd. Maplewood Branch P. O.
St. Louis, U. S. A.
West Coast Representatives: Pacific Scientific Company, Los Angeles—San Francisco
Eastern Office: 433 East Montana Ave., Philadelphia, Pa.

ALCO

Manufacturers of constant pressure type expansion valves, Thermo valves, high pressure float valves, liquid magnetic stop valves and suction line stop valves.

Intimate Glimpses of Engineers at Kansas City Conclave

WILLIAM SIMONS of Kansas City played host to the gathering of refrigerating engineers.



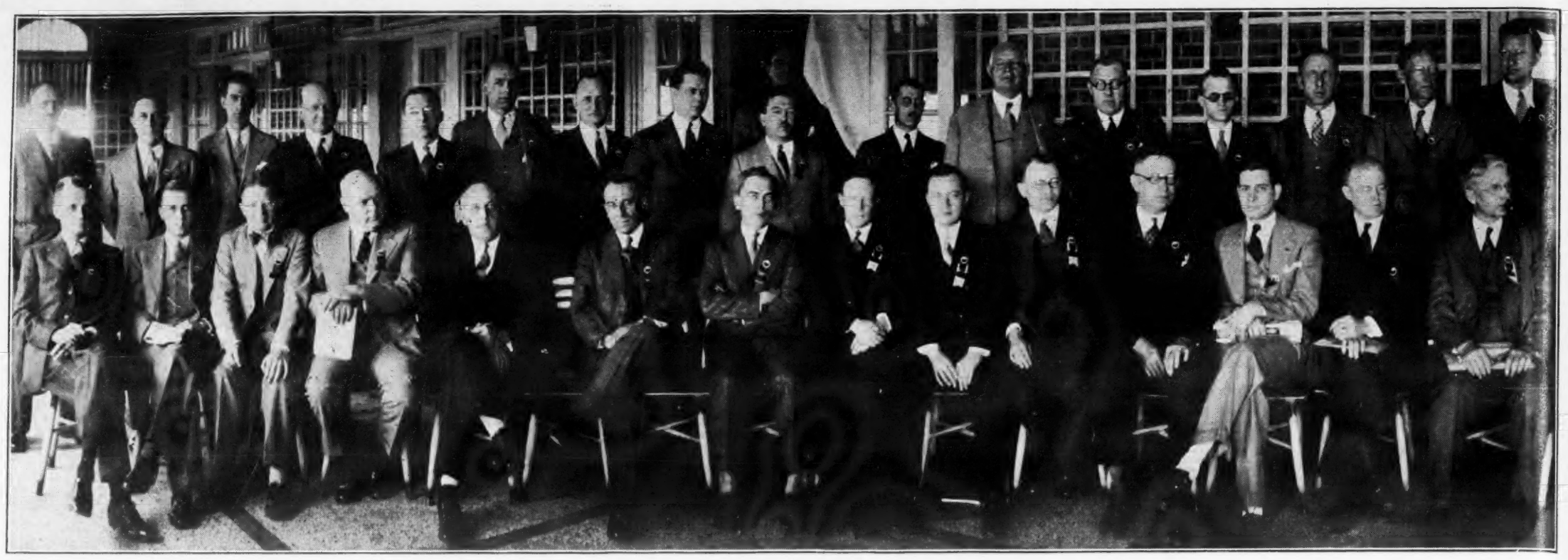
C. H. TANGER of Servel is pictured above addressing the Thursday morning session of the convention of the American Society of Refrigerating Engineers held May 6, 7, and 8 at Kansas City. Tanger spoke on the "Noise Problem in Compressors." In the background, seated, is Glenn Muffly of Copeland, vice president of the society, who presided at this session. In this room on the roof of the Kansas City Athletic Club were held all of the morning technical discussions.

S. C. BLOOM (left) in a moment of relaxation with C. H. HALL (center) of New York, and T. W. CARRAWAY of Indianapolis.

HARRY WILLIAMS, research chemist for the Frigidaire Corp. in Dayton, Ohio, was one of the prominent men in the industry who attended the gathering.

GEORGE BRIGHT (left) of Detroit and E. M. DODDS (right) of Kansas City are shown above indulging in a bit of reminiscing.

Refrigerating Engineers Gather From Many Parts of the Land



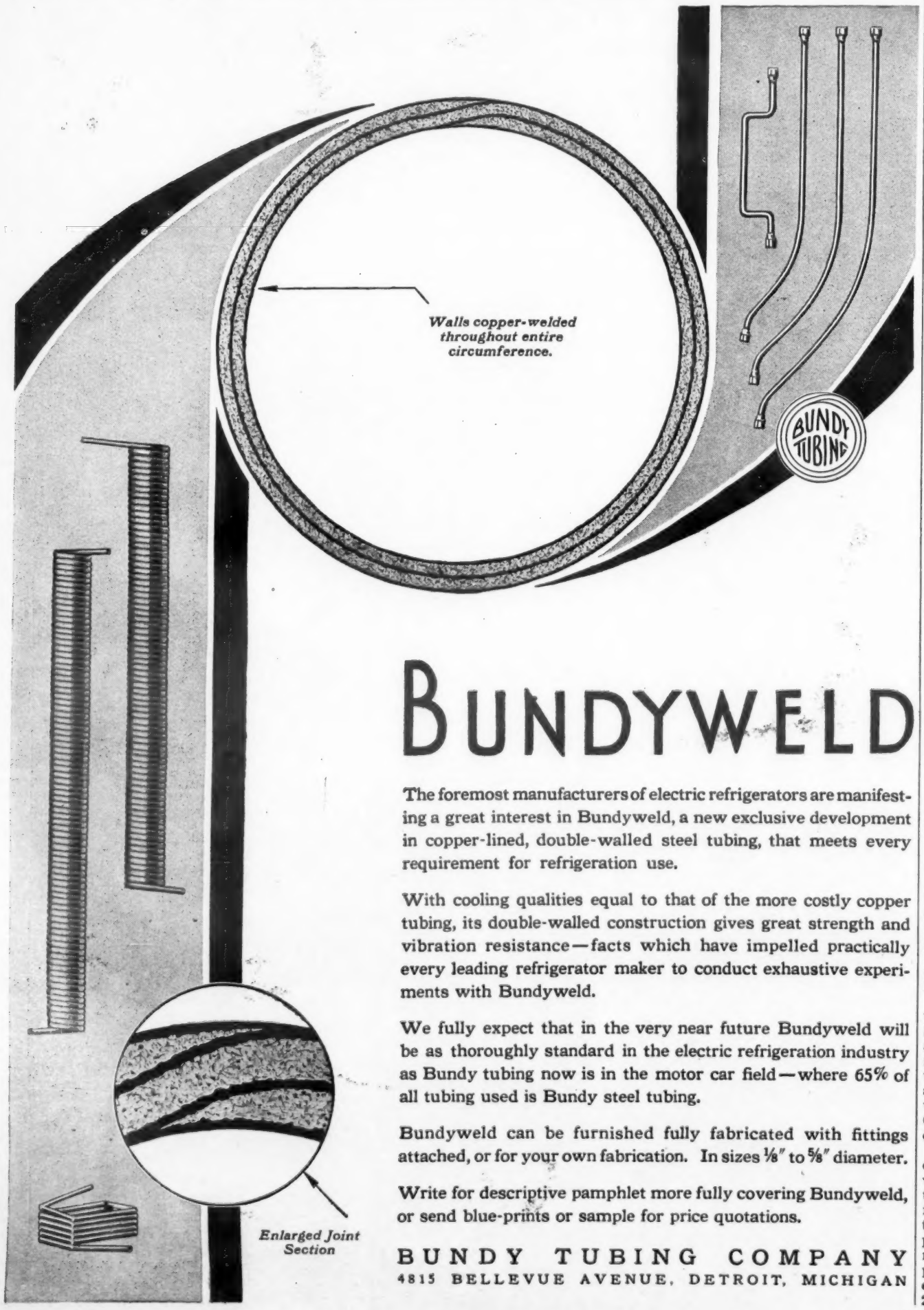
CLAUDE NEON ANNUAL REPORT SHOWS $268,060 PROFIT

NEW YORK CITY—The report of Claude Neon Lights, Inc., New York. for the year ended December 31, 1930 shows net realized profit of $268,060.77 In addition to the above stated realized profit, the company's proportionate interest in realized net profits, after deducting dividends, of affiliated companies' reported profits for 1930 and increased deferred gross income totaled $339,888.42.

Total Claude Neon business, together with that of its licensed companies for 1930 amounted to approximately $15,349,500 against $15,778,900 for 1929.

DAVID A. EBINGER DROPS DEAD IN CHURCH LOBBY

COLUMBUS, Ohio—David A. Ebinger, president of the D. A. Ebinger Sanitary Mfg. Co., was buried here March 6, following his unexpected death in the vestibule of the Presbyterian church of Fort Myer, Fla. Mr. Ebinger was 54 years old.



BUNDYWELD

The foremost manufacturers of electric refrigerators are manifesting a great interest in Bundyweld, a new exclusive development in copper-lined, double-walled steel tubing, that meets every requirement for refrigeration use.

With cooling qualities equal to that of the more costly copper tubing, its double-walled construction gives great strength and vibration resistance—facts which have impelled practically every leading refrigerator maker to conduct exhaustive experiments with Bundyweld.

We fully expect that in the very near future Bundyweld will be as thoroughly standard in the electric refrigeration industry as Bundy tubing now is in the motor car field—where 65% of all tubing used is Bundy steel tubing.

Bundyweld can be furnished fully fabricated with fittings attached, or for your own fabrication. In sizes ⅛" to ⅝" diameter.

Write for descriptive pamphlet more fully covering Bundyweld, or send blue-prints or sample for price quotations.

BUNDY TUBING COMPANY
4815 BELLEVUE AVENUE, DETROIT, MICHIGAN

Pruitt Shows How Refrigeration Is Used To Remove Wax From Oils

KANSAS CITY, Mo.—Refrigeration plays an important role in oil refining processes, according to Harris Pruitt, chief engineer of the Texas Pacific Coal and Oil Co. of Fort Worth, who addressed the Wednesday morning session of the A. S. R. E. convention here, on "The Refrigeration Requirements for Oil Refining."

In his own company's plant alone, approximately 11,000 tons of refrigeration are employed to remove the paraffin from base oils so that they may be used as lubricants to meet exacting requirements such as those of airplane engines. The presence of paraffin wax in oils for applications of higher temperatures is objectionable, he said, because even if it does melt, it becomes like water and has no lubricating value. Consequently it must be removed.

Modern refineries remove the paraffin by means of certrifuges, and obtain oils that have cold tests as low as minus 15° F., depending upon the temperatures to which the oils are chilled and upon the skill of the operators, Mr. Pruitt explained.

"Various methods and equipment are used for chilling the oil to be dewaxed. One method producing one of the best oils on the market uses a chilling surface. Starting with a lubricating stock that has already undergone all the refining processes except dewaxing, the oil is pumped into a 1,900 bbl. steel tank, where it is mixed with naptha by heating and agitating, until all the wax is in solution," he stated.

From this blending tank, the solution is transferred to a brine chilling tank, where the first of the three chilling operations is accomplished. The heavily insulated 1,900 bbl. cone bottom chilling tank contains approximately 1½ miles of 2 in. brine coils in which the oil solution is agitated slowly by paddles at the bottom of the tank, he explained.

At the beginning, the oil solution has a temperature of 100° F., with the circulating brine at 85° F. As the oil cools, the temperature difference is very carefully kept at 15° F. because if the differential were any greater, the oil would be "shock chilled," which is undesirable because the wax would be precipitated as very fine crystals that have a specific gravity very near that of the solution. Under these conditions, the separation is much more difficult, he pointed out.

In the first stage the oil is chilled from its initial 100° F. temperature to 80° F. at the rate of 4 to 5° F. per hour, and from 80° to 0° F. at the rate of 3° F. per hour. The schedule is arranged so that one of the four tanks effecting this first stage chilling always has a tank of oil at 0° F. ready for the next chilling stage, according to Mr. Pruitt.

An ammonia direct expansion chiller, with the ammonia entering at minus 55° F. cools the oil to minus 38° F. in accomplishing the second stage of chilling. The oil solution is then piped to the third chilling stage, where ammonia at about minus 95° F. drawing a 28 in. vacuum, brings the oil solution to minus 60 or 65° F. Now the oil is ready to be centrifuged, he said.

Twenty Sharples centrifuges next receive the oil by gravity feed, where the wax is removed, and the dewaxed solution lead off at about minus 40° F. Before the naptha is distilled off, an oil-to-brine heat exchanger brings its temperature up. When the naptha has been removed in the pipe still, the finished product is a lubricating oil having a cold test of below 0° F. Ordinarily the 20 centrifuges will process about 2,200 bbls. of solution in a 24-hour day, he reported.

"The entire apparatus is cork insulated, very cold surfaces having 10 in. of cork, and pipes having at least 6 in. of insulation, covered with asphalt paint, and finished with a coat of aluminum paint," Mr. Pruitt said.

"Operating under such low pressures and temperatures, it is difficult to keep air from leaking into the system through the many connections on the chillers. Since practically all connections are heavily insulated, they are not readily accessible except at the loss of considerable insulation, so it is more economical to purge the air from the system than to try to stop every leak. Continuous purging equipment is used, and the system is purged from several points," he concluded.

IRWIN URGES SCIENTIFIC STUDY OF FOOD FREEZING

KANSAS CITY, Mo.—It is only by constant study and interchange of results obtained that we will bring freezing and storage to a par with the more exact sciences, J. C. Irwin, Jr. of the United States Cold Storage Co., Atlanta, Ga., declared in the Friday morning meeting of the A. S. R. E. convention.

"Freezing and storage of foods has been a gradual development," he pointed out, "and it was not difficult as the demand came to set up reasonably satisfactory conditions for the more easily stored commodities."

Reliable information has been accumulated slowly by the experience of the various operators throughout the country, but generally there has been a dearth of reliable data, he continued.

"However, in the past few years there has been an increasing number attacking the problems, and taking advantage of the assistance offered by pure science," he stated. It is the studies of individuals such as Ottesen, Birdseye, Taylor, Stuckey, and others that will popularize the field of freezing, he believes.

"We are at a period when the field of freezing and storage can be markedly increased," he stated. "Attention to the preparation of the commodity and its condition when received is of prime importance. Quality of service will be determined by the most minute differences in the product.

"These factors indicate the need of using every tool at our disposal to learn to produce through suitable control, a final product that is better than necessary, and indistinguishable, if possible, from the most perfect of its kind," he concluded.

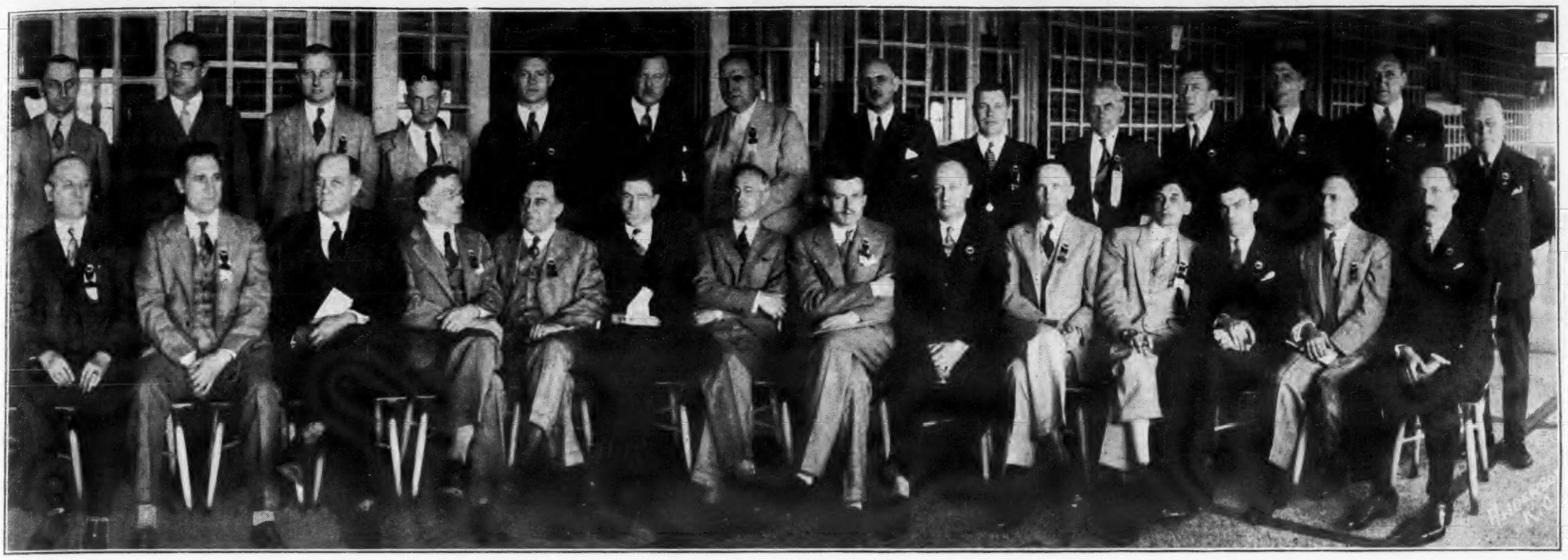
SALES OF VACUUM CLEANERS ANNOUNCED BY ASSOCIATION

NEW YORK CITY—Sales of vacuum cleaners for the last six months of 1930 have been announced by the Vacuum Cleaner Manufacturers' Association, as follows: July, 52,225; August, 65,164; September, 79,185; October, 73,934; November, 78,626, and December, 78,611.

DETROIT MANAGER

CHICAGO—The Link-Belt Co. here, announces the appointment of Mr. William Hartley as district sales manager in charge of the Detroit territory, with offices at 5938 Linsdale Ave.

To Discuss Mutual Problems at Convention In Kansas City



Mullergren Suggests Decentralization Of Ice Producing Plants

KANSAS CITY, Mo.—Contrary to the present-day tendency of centralization and mass production, the general characteristics of the ice industry demand the decentralization of its producing units, according to A. L. Mullergren, consulting engineer of this city, who pointed out the essential factors in the management of a large group of ice properties before the A. S. R. E. convention here.

"The selection of the properties for a major consolidation should take into consideration their characteristics and locations from three standpoints," he said, "local, territorial, and regional.

"Local considerations have to do with the selection of individual units in a community in order to give that community the best possible service at the lowest possible cost.

"The selection of the proper size, number, and location of communities in any general territory so as to provide a group sufficient to afford the services of the proper administrative personnel to give the proper direction to the sales policies and proper supervision of production, distribution, and accounting operations, constitutes the second consideration," Mr. Mullergren said.

The third factor to be considered concerns the diversification of the territories from a climatic and business standpoint, he pointed out. "The sale of ice and refrigeration depends upon two factors, the weather and general business conditions. In a large consolidation of properties, it is important that diversified territories be selected so that when adverse climatic or economic conditions occur in one or two territories, the earnings of the company as a whole will not be affected too seriously," he said.

It is desirable to have a financial structure with as little funded debt as possible, in the opinion of Mr. Mullergren, although this is governed almost entirely by the condition of the securities market at the time of making the consolidation.

The problem of management is regarded by Mr. Mullergren as the most important consideration in the successful operation of ice properties, and accordingly he devoted most of his time to this subject. "The entire business should be departmentized in such a manner that the responsibilities and authorities are well defined," he claimed.

"An organization chart should be prepared showing the entire plan of operation, and its method of functioning from the general administrative and executive staff down to the local operating organizations of the individual units," he stated, and illustrated his point by outlining the organization of the American Service Co., a large firm which Mr. Mullergren organized and delevoped in 1928.

He cited it as a typical horizontal type of merger, with 92 properties located in three diverse sections of the country, the Southeast, the Southwest, and the Middlewest. The organization chart showed the functions, responsibilities, and authorities of the various departments and department heads from chief executive, or president, down to the head of each individual unit, designated as the local manager. The total administrative expense of the main general office and three division offices averages about four per cent of the gross sales, he said.

PROF. CADY ENTERTAINS WITH LIQUID AIR TRICKS

KANSAS CITY, Mo.—Amusing a group of refrigerating engineers with well-known tricks in chemistry that they have known since their high school days is no easy matter, but that is just what Dr. Hamilton P. Cady, chairman of the department of chemistry at the University of Kansas, accomplished following the welcome luncheon to the A. S. R. E. convention.

The refrigeration experts sat back in their chairs and laughed heartily at the time-honored jokes of turning cranberries to marbles by freezing them in liquid air, and at seeing the cork pop from the test tube in which liquid air boiled. It wasn't the experiments at all that were so entertaining, but Dr. Cady's engaging classroom presentation and unique explanations.

He first spoke briefly about the manufacture of liquid air, pointing out how ordinary air is brought to a pressure of 3,000 lbs. per sq. in. bv four stages of compression with ammonia cooling between each stage, and is then expanded to atmospheric pressure with the cumulative cooling effect of the expansion finally producing a temperature of minus 312° F. where liquification takes place. It boils at minus 200° F.

"Nothing is so good an insulator as nothing," he said in explaining the insulating effects in the vacuum-jacketed flasks in which he handled liquid air.

Carnations, frozen to a crisp by submersion in the liquid atmosphere, were highly entertaining to the ladies, and Dr. Cady's fortitude in taking some of the arctic stuff in his mouth amazed most of the men.

There is really very little danger in human contact with liquid air if it is only momentary, he claims, because the heat of the body boils that surface of the liquid which it touches, maintaining a constant film of separation. He even claims to have swallowed small quantities of liquid air on occasions; however, this practice is dangerous because of the fact that air expands 800 times when it volatizes, he admitted.

Scientific and Historical Data of the Refrigeration Industry

An explanation of the principles of mechanical refrigeration and the historical background of the refrigeration industry are given in the court record of the Frigidaire-Absopure Patent Suit.

The complete proceedings of the trial, which took place at Bay City, Mich., March 18-23, 1929, are reprinted in a 48-page supplement.

The expert testimony recorded in this document furnishes a most illuminating exposition of the various refrigeration processes and a valuable picture of the historical development of the industry.

Postpaid to any address for $1.00 per copy. *Remittance must accompany order.*

Electric Refrigeration News
550 Maccabees Bldg., Detroit, Mich.

WESTERN ELECTRIC RECLAIMS EIGHT MILLION IN SCRAP

CHICAGO—Scrap reclaimed at the Western Electric Co.'s Hawthorne works last year was valued at more than $8,000,000. Cable, which is discarded from telephone service, is the largest single item. Among the various classifications of scrap reclaimed are iron, steel, rubber, wood, paper, chemicals, paints, sawdust, wire, felt, slate, mica, rosin, thread, wax, and several of the precious metals.

A large percentage of the copper reclaimed is re-used in the manufacture of new cable. Copper which has been de-based so as to be unsuitable for this purpose is shipped to outside refineries.

ENAMELED WARE SHIPMENTS $13,516,548 IN 1930

WASHINGTON—Shipments of enameled sheet metal ware in 1930 totaled 3,526,299 dozen items, valued at $13,516,548, compared with 4,504,102 dozen, valued at $16,101,787 in 1929, according to the Bureau of Census.

TINNED COPPER

offers marked advantages

For ice-trays, grids, containers, cans for storing ice cream and linings for compartments of large commercial units, Tinned Copper offers these advantages:

- Sanitary . . . easy to keep clean.
- Does not impart taste to food.
- Stands up under everyday service.
- Highly resistant to alkaline water.
- High thermal conductivity speeds up freezing.
- Easy to fabricate and reasonable in cost.

In addition to tinned copper, the American Brass Company is prepared to supply copper sheets polished, nickel or chromium plated.

Other Anaconda products for the electric refrigeration industry include Everdur, a high strength, corrosion-resisting alloy in the form of sheets, wire, rods and tubes. This metal is now available in thin sheets down to .003"; Brass, Tobin Bronze and Everdur Die-Pressed Parts; Ambrac, a strong, readily workable, non-corrosive white metal for screws, bolts, racks, and metal trim.

Detailed information in regard to any product gladly sent on request.

ANACONDA from mine to consumer

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut

ANACONDA COPPER & BRASS

Future of Air Conditioning Depends On Good Design, Olchoff Says

KANSAS CITY, Mo.—The popular appeal that is being made for air conditioning in the motion picture theater strongly indicates that it will become as much of a general necessity for comfort as the automobile is for transportation, the electric refrigerator for household use, or the radio for entertainment, in the opinion of Maurice Olchoff, who addressed refrigeration engineers here Wednesday morning, May 6. Mr. Olchoff is manager of the refrigeration department of the Natkin Engineering Co. of this city, local representative of the Brunswick-Kroeschell Co.

He pointed out that recent studies have disclosed some interesting facts regarding the heat losses from the human body, and the effect of temperature, humidity, and air motion on human comfort. "It has been found that the average human body has a heat output of approximately 400 B. t. u. per hour over a wide range of temperature, humidity, and changes of clothing," he said.

"This heat loss is divided into sensible heat, resulting in the rise of dry bulb temperature by radiation and convention, and latent heat, resulting in rise of dew point temperature by evaporation. The body exposed to an atmosphere at 85° F. will give off 62 per cent of its heat loss through evaporation, and 38 per cent by radiation and convention; while, at 70° it will give off 25 per cent of its heat loss through evaporation, and 75 per cent by radiation and convention," Mr. Olchoff stated.

"These variations indicate the necessity of properly conditioned air to absorb the heat losses in their proper relation, so that the condition of the air will be within the comfort zone.

"It has been found that different conditions of temperatures and humidities will produce the same degree of comfort. For instance, air at 75° F. dry bulb and 50 per cent relative humidity, will produce the same degree of comfort as 70° dry bulb and 100 per cent relative humidity. This relation of comfort is taken from the Comfort Zone as determined by the Harvard School of Public Health for air motion of 15 to 25 ft. per minute.

"For this comfort zone, we are able to select for each dry bulb temperature a complementary relative humidity, which will produce a comfortable air condition. Each of these conditions is designated by a single term: 'effective temperature.' As the relative humidity decreases, the dry bulb temperature must be increased to maintain the same degree of comfort," according to Mr. Olchoff.

The comfort zone has its greatest value in establishing a standard for air conditioning, he believes, since it gives a latitude of design to effect the greatest economy and comfort.

While human comfort depends on effective temperature, it does not follow that there is only one effective temperature for comfort, he pointed out.

"There is another factor which must be considered. This factor is commonly called shock or sense impression, on entering or leaving an air conditioned space.

"When the outdoor dry bulb is 95° F. and the indoor temperature is 80°, this 15° between the outside and the inside would be satisfactory. However, with a dry bulb temperature of 85° outdoors, a 15° difference in temperature would produce an undesirable shock on persons leaving or entering the conditioned space," he said.

The shock element is of great importance where people are entering an air conditioned space only for a short period—like in a theater, restaurant or dining room, he explained.

"It is of no great importance where people assemble for long periods to enjoy air conditioning.

"The first attempts made at air conditioning were really air cooling installations, as very little effort was made to control humidity closely; but gradually the necessity of controlling this factor became apparent.

"The public is being educated to air cooling through a more restricted term: air conditioning, briefly, meaning the control of temperature, humidity, air motion and purity," Mr. Olchoff opined. "The refrigeration engineer is concerned with air conditioning only during those times of the year when cooling is required to reduce the temperature and humidity of the air in order to maintain comfort," he said.

"The refrigeration load will be made up of the total sensible heat load, due to persons and other factors, such as lights, motors, radiated and convected heat from conditioned space.

"This will result in the rise of the dry bulb temperature. The latent heat load will be made up of moisture from the people, and will result in moisture being added to the air," Mr. Olchoff explained.

"The central scheme of any air conditioning plant should be to provide a means of controlling both the temperature and moisture content of the air introduced to be used for air conditioning. There have been several schemes used to accomplish these results," he said.

"The success of any air conditioning system depends to a great extent on the air distribution system within the room. The system must be reasonably noiseless, ventilated, and must be free from objectionable drafts," he continued.

"Designers of theaters and auditoriums where large quantities of air are introduced, usually resort to ceiling introduction of the air. The air is usually blown against a panel, which diffuses the air over the ceiling and gradually falls to the occupied spaces in a uniform blanket.

"A system recently introduced to the theater consists of a series of ejector nozzles at the rear of the theater, blowing air across the ceiling, the air gradually falling before reaching the stage.

"The air then is drawn across the theater and exhausted at the rear. The velocity of the air across the ceiling induces a circulation corresponding to the effect of three to four times the amount of air supplied," he said.

"This system permits the use of a smaller amount of air, and affords a means of properly diffusing the cooled air within the room. It has been modified for office building cooling by introducing the air through panels or cabinets within the room, and discharging air vertically along walls or windows, the air gradually finding its way across the ceiling.

"Both of these systems produce the same re-warming effect as the by-pass method, but the mixing takes place through the induced circulation near the ceiling or in the cabinet. Other developments point toward a smaller quantity of air actually supplied to accomplish the desired results. These tendencies make for simpler, smaller distributing systems, lending themselves to installations in which space is at a premium," he showed.

Three Principal Refrigerants Used

Ammonia, carbon dioxide, and carrene are the three principal refrigerants usually used for refrigeration in air conditioning, according to Mr. Olchoff. "Ammonia is usually employed through compression equipment to cool water either with coils submerged in the water, or by means of Baudelot coils over which water is circulated. Sometimes brine is cooled and the brine in turn is used to cool the water. This is usually desired as a safety necessity. The working pressures vary from 30 to 50 lbs. on the low side, and from 160 to 200 lbs. on the high side.

"Carbon dioxide is employed through compression equipment to cool water with coils placed in a dehumidifier or external cooler. It has met with great favor where safety is of major importance. The working pressures are usually 400 lbs. on the low side, and 1,000 to 1,400 lbs. on the high side.

"Carrene is used in centrifugal compressors with the entire high and low side mounted into a compact unit. The working pressures are below atmospheric pressures on both the high and low sides. The carrene system is specially designed for air cooling work," he stated.

Cites Design Requirements

"The refrigerating engineer is gradually realizing the necessity of specially designed equipment to be used for air cooling work. This equipment," Mr. Olchoff says, "should fulfill the following requirements:

1. It should be designed for the purpose involved.
2. It should be safe.
3. It should be simple, so that only ordinary care is required.
4. It should be economical to operate.

"Other refrigerants besides those already mentioned have been used to meet some particular peculiarity of design, or to effect certain economies" he continued. "Methyl chloride and sulphur dioxide have been used in systems requiring only a few tons, and their use is increasing as smaller units are developed," he said.

"Safety is of paramount importance in air conditioning," declared the speaker.

"Air conditioning presents many problems for the refrigeration, ventilation and heating engineer. It is a common meeting point for these three great engineering arts," he said in conclusion.

"The public will receive air conditioning as a necessity when the difference between cooling and air conditioning is more fully recognized. We are now in the early stages of the development of a new industry. Great strides may be made in the near future," Olchoff predicted.

South Meets North

C. T. BAKER (left) consulting refrigerating engineer from Atlanta, is pictured above with GALE T. PEARCE of Chicago, engineer in charge of sales for the Dry-Zero Corp.

WEEKLEY, PATE TRANSFERRED TO NEW YORK CITY

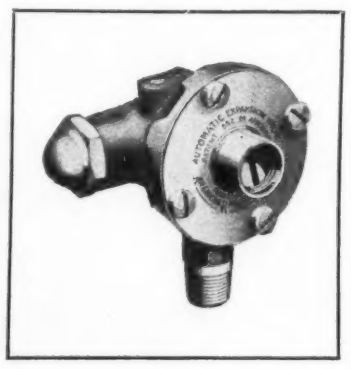
EVANSVILLE, Ind.—O. E. Weekley, commercial service representative for Servel Sales, Inc., has been transferred to New York City branch to act as inspector of all Servel installations in that district, according to C. L. Olin, commercial service manager for Servel Sales. He will remain in this capacity for approximately 90 days.

J. E. Pate, commercial service representative for Servel, has been transferred to New York also, where he will act as service manager in that district for the next three months, Olin announced.

Pate makes his headquarters at the Evansville factory offices of Servel.

AMERICAN

Automatic and Thermostatic Expansion Valves



American Automatic Expansion Valves accepted as standard equipment by most of the manufacturers of domestic refrigerating machines using the direct expansion system.

American Thermostatic Expansion Valves consist of the celebrated American Automatic Expansion Valve equipped with a thermostatic power element which replaces the normal adjusting screw. This valve although only two years in production has revolutionized the handling of multiple and commercial installations.

Manufacturers of
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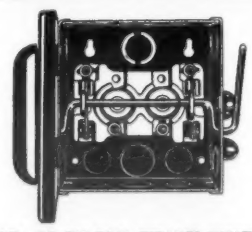
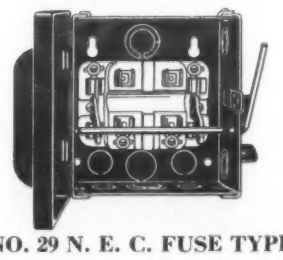


NO. 33 PLUG FUSE TYPE



NO. 29 N. E. C. FUSE TYPE

CABINET SIZES

Length	Width	Depth
6 in.	5 1-2 in.	3 1-8 in.

The WADSWORTH ELECTRIC MFG. CO. INC.
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EXTRA DRY

Made by our exclusive patented process. ESOTOO Pure, easy to handle, does not deteriorate.

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AYRES IS BEST MAN OF ENGINEER-GOLFERS

By T. G. Francis

KANSAS CITY, Mo.—A dark horse from the remote fastnesses of Schenectady rode up through the wilderness of the Indian Hills country club here to win the A. S. R. E. golf championship for 1931 by an underslung whisker from as motley a list of starters as ever lined up at the barrier.

His name is R. W. Ayres, he works for the General Electric Co., he tallied 102 strokes for the course, and he holed one mighty putt to beat out the veteran F. M. Fuller of the Jamison Cold Storage Door Co. by the margin of a solitary, uncompromising stroke.

The new champion, a roly poly young man with a mustache and an up-and-coming drive, went out in 54, three strokes behind Fuller. Ayres began to find his putting eye on the second nine, however, and came back strong in 48—while Fuller was registering 52—to win the tourney.

Ayres shot consistent golf, getting either a five or a six on almost every hole.

It was a bad day for Detroit. George Bright, heavy favorite, on whom 10-1 odds were offered with no takers before the tournament, found (it seemed to him) a collection of garden implements and croquet mallets in his golf bag, but bravely plowed ahead to tie for

JOHN WYLLIE of Kelvinator shows how to "keep your eye on the ball."

fourth place with a miserable (for George) 106. He generally shoots in the eighties.

Bright had as much trouble locating his truant putting touch that shining Thursday afternoon as father has in trying to find his bankroll the morning after Christmas, and his iron shots were about as steady and true as a Hollywood luminary's affections.

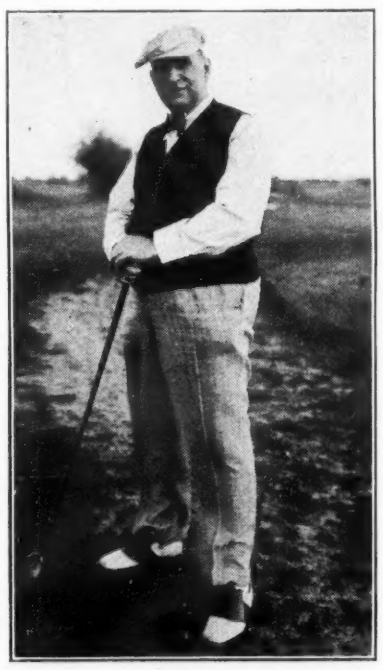
The predicted winner had a huge afternoon of enjoyment, however, and reiterated his declaration that golf is the greatest boon to mankind since the discovery of refrigeration.

R. E. Knapp and John Wyllie of Kelvinator Corp. in Detroit, also found the bunkers and sand traps too numerous, and the greens too untrustworthy. They chalked up 128 and 135, respectively.

Consolation prize was awarded to the fourth member of the Detroit quartet, George F. Taubeneck of ELECTRIC REFRIGERATION NEWS. Playing far better golf than ever before in his career, Taubeneck went out in 78 and came back in 73 for a grand total of 151 strokes.

For this prodigious feat he was awarded nine Walter Hagen golf balls, which will almost compensate him for those he plumped into water hazards and sliced into the forest preserve in the next county.

H. W. Williams, the Frigidaire refrigerant authority, found it harder to corral his wood shots than to confine gases with the itch for travel, and rung up 121 strokes before he called it a day.



GEORGE BRIGHT of Detroit, pre-tourney favorite, had an unexpected slump.

Hugh Krampe of Armstrong Cork played in-and-out, brilliant-and-dub golf for a total of 119.

Scores follow:

	Out	In	Total
R. W. Ayres	54	48	102
F. M. Fuller	51	52	103
P. de Roulette	57	47	104
George Bright	58	48	106
E. T. Archer	53	53	106
Hugh Krampe	60	59	119
H. W. Williams	63	63	126
R. E. Knapp	68	60	128
W. J. King	66	66	132
John Wyllie	65	70	135
G. F. Taubeneck	78	73	151

Just Before the Alibis

Contestants in A.S.R.E. golf championship line up at first hole. R. W. Ayres, winner, is third from right.

N.E.M.A. ISSUES TELEGRAPH CODE BOOK

NEW YORK CITY—A telegraph code book to be known as *"Lcode"* to the electrical field has been prepared by the National Electrical Manufacturers' Association.

The book, which will be available to the industry in August, 1931, will contain about 50,000 code words relating to general business phrases, and technical terms, with a tabular section covering calendar, telegrams, letters, and numerals.

A joint industry committee representative of the National Electric Wholesalers' Association, Association of Electragists, Radio Manufacturers' Association, National Electric Light Association, Radio Wholesalers' Association, and the Society for Electrical Development has cooperated with N. E. M. A. to issue a code book of standard five-letter combinations "to include all words and phrases commonly used in the purchase and sale of electrical equipment and supplies."

A sub-committee consisting of A. B. Zerby, Westinghouse Electric and Mfg. Co., chairman; J. F. Quinlan, General Electric Co., and W. O. Conway of the N. E. M. A. staff is carrying on the work.

PITTSBURGH BRANCH OFFICE OF BRISTOL CO. MOVED

WATERBURY, Conn. — Pittsburgh branch offices of the Bristol Co. were moved from the Frick Building to the Kopper's Building, on May 1.

OIL BURNER ASSOCIATION ADMITS NEW MEMBERS

NEW YORK CITY—To the manufacturers' division of the American Oil Burner Association the following members have been recently admitted: Ryan-Scully Co., Philadelphia, Pa.; Korth Engineering Corp., Roselle Park, N. J.; and the Mid-West Oil Burner Mfg. Co., Chicago.

Members admitted to the associate division include the Northern Pump Co., Minneapolis, and the Pioneer Instrument Co., Brooklyn, N. Y.

GAS REVENUE GOOD IN 1930 ASSOCIATION REPORTS

NEW YORK—Companies which did more than 90% of the artificial gas business in 1930 report revenues totaling $376,885,239 as compared with $376,682,611 in 1929, according to the American Gas Association.

GRIGSBY- GRUNOW TO PAY ROYALTIES ON SPEAKERS

SAN FRANCISCO—The Magnavox infringement patent suit against the Grigsby-Grunow Co. has been recently settled. The Grigsby company has agreed to make a substantial down payment to Magnavox on all dynamic speakers made hereafter.

KELVINATOR INSTALLS 110 WATER COOLERS

NEW YORK CITY—Installation of 110 Kelvinator water coolers in the New York State Office Building was recently completed by the Kelvinator branch here. This new building was erected at an approximate cost of $5,000,000 and is occupied by various state departments.

BURKS SHOWS VALUE OF TREATING WATER

KANSAS CITY, Mo.—Results of an investigation conducted by the Engineering Experiment Station of the University of Illinois in cooperation with the Utilities Research Commission of Chicago, on "Treatment of Water for Ice Manufacture," were presented by Dana Burks of the University at the Friday morning session of the A. S. R. E. convention.

Formerly, when steam was used to furnish the power required in the refrigeration cycle, the ample supply of distilled water was used for freezing, he said, but since the advent of electric power this exhaust steam is no longer available, and ice must be made from raw water sources.

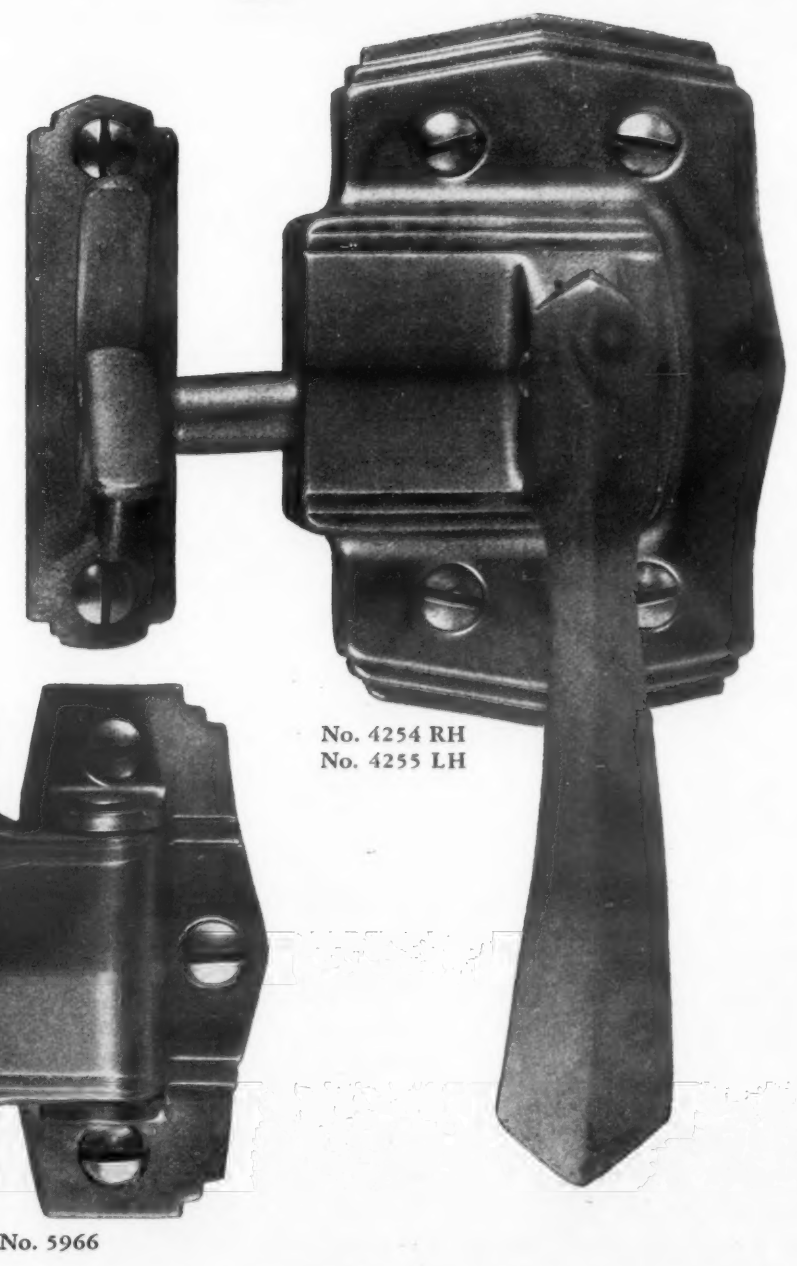
He showed that chemical water treatment is capable of producing solutions possessing the qualities most desirable in raw water ice manufacture. Complete details concerning the use of the method developed at the University of Illinois are included in bulletin 219, published by the Engineering Experiment Station, Urbana, Ill.

COMPRESSORS ARE REPLACED IN WEALTHY HOME

BRIDGEPORT, Conn.—Refrigerating equipment of long standing in the home of Walter B. Lashar, president of the American Chain Co., in Round Hill, Fairfield, has been replaced with new compressors and cooling units.

The new equipment, which supplies refrigeration for large pantry, kitchen and storage refrigerators, consists of three Frigidaire compressors and four coils, according to A. F. Becker, manager of the Downes Smith Co., Bridgeport dealer.

New Wrought Brass Locks *and* Hinges



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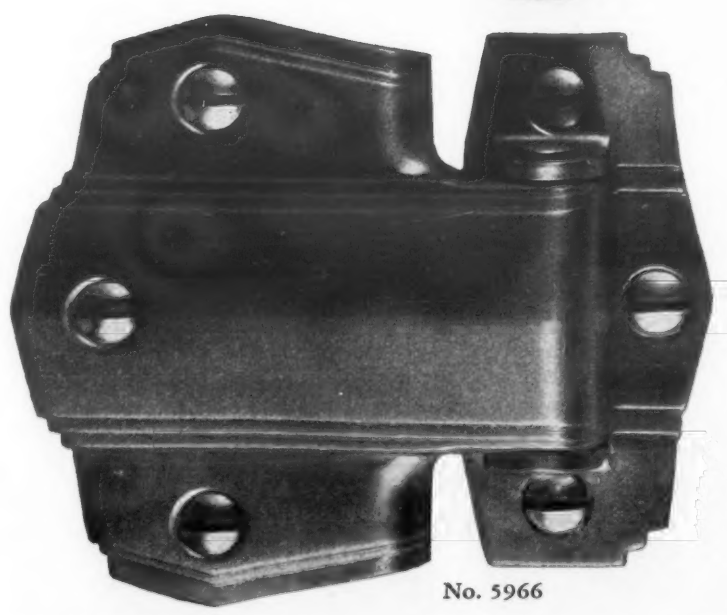

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Ideas Breed Ideas

SIGNIFICANT indeed is a convention such as the gathering of refrigerating engineers at Kansas City May 6, 7, and 8. There are those who sometimes doubt the value and worthwhileness of conventions which are chiefly inspirational in character; but few will not agree that meetings of trained engineering minds to discuss the problems of a particular industry are potentially productive of ideas worth many times the cost of the conventions.

The willingness to exchange ideas freely and expose brain-children to critical examination is characteristic of the engineering profession, as it is of the medical fraternity. These men are acutely conscious of the existence of the Great Unknown. They realize that the sum total of undiscovered knowledge is so great that more is to be gained by the exposure of ideas than by hovering niggardly over the few that they are able to uncover.

Many Aid in Solutions

In the individual who gets one Big Idea in a lifetime, there is often a tendency to guard it jealously. He is so profoundly impressed with his unusual experience and with his own sense of the magnitude of his idea that he spends the remainder of his life protecting it against the prying of a curious world.

To the man with many ideas, the man who is delving continually into the Great Unknown, the relative insignificance of a single notion as compared to the infinite whole becomes clear. He is thus willing and eager to deposit it into a common treasury upon which he himself is then able to draw.

The liberal interchange of ideas among engineers is useful not because men are thus enabled to *adopt* or *copy* the concepts worked out by their brothers in the profession, but because these notions may *suggest* solutions to other problems upon which the men in question are working.

One man's discovery may assist a dozen others in supplying missing pieces for mosaics and in filling gaps in patterns. Moreover, it may start another man on a new train of thought which will lead to still another discovery.

Discussion Inspires Thought

Engineers are not prone to accept the ideas of others without testing them to their own complete satisfaction. Naturally of a questioning habit of mind, they insist on solving enigmas for themselves. At Kansas City, as at similar sessions of refrigerating engineers, almost every man who got up to address the assemblage on a particular topic was subjected to a merciless cross-examination. The discussion periods were often the most interesting portions of the sessions, and usually the intervals of inquiry brought out valuable information which otherwise might have lain dormant in the minds of the speakers, or might have remained unsolicited with those who listened.

Only a relatively small number of refrigerating engineers, of course, were able to attend the parliament of minds at Kansas City. But from those who did attend, information will be carried back to organizations, and will thence filter out to other engineers and their organizations. Of far-reaching significance is the publication of reports of the sessions, as given in this issue of ELECTRIC REFRIGERATION NEWS, so that a whole industry may benefit. The widespread dissemination of such knowledge will surely result in the general advancement of the art of refrigeration.

Historians and sociological interpreters are generally agreed that scientific investigation and the application of engineering to the results of such investigation have been largely responsible for our present high state of civilization—the most comfortable, clean, closely knit, and well informed period in the history of the world. And the fact that scientists and engineers have been willing to contribute the results of their studies to a common fund for the general welfare is perhaps one of the chief reasons for the great progress which has been made since the time of Francis Bacon.

Meetings of engineering minds and the promulgation of the information they bring to light, should be encouraged. By the application of good engineering to recent scientific discoveries, in the development of new products to manufacture and sell, will surely come a stimulus to business which should lift us out of the present depression and create a new period of prosperity.

On Our Bookshelves

"AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE."

Publisher: American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York City. Pages: 983 Publication Date: 1931. Price: $5.00.

THIS complete compendium of information about the heating and ventilating industries is a pleasure to leaf through, and makes one wish for a comparable work in the field of refrigerating engineering. Its covers embrace nearly a thousand pages of well-edited chapters covering principles and the many ramifications of heating and ventilating engineering.

Not only the long established methods and practices of this particular profession are ably explained, but the latest innovations have been investigated and are treated in an authoritative manner. It is unique as an engineering handbook in that it keeps abreast of current practices by coming out every year. The volume is replete with technical data, charts, tables, and formulae.

Of particular interest to the refrigerating engineer is the chapter on air conditioning which states the fundamental principles as conceived by the society, and shows the applications in industrial uses and for human comfort, together with the various systems now in use for conditioning and distributing air. Air conditioning for comfort is divided into three general groups: first, the sparsely occupied enclosure; second, the crowded enclosure; and third, the one in which industrial heat plays a part.

The first group embraces the home, the small office, hospital room, hotel rooms, banks, club rooms, general offices, where there is ample space for the workers. Here the absolute humidity will coincide almost exactly with that of the outdoor air, except where the heat from the sun is a factor.

In the second classification, involving the crowded enclosure, the heat and moisture given off by the people becomes the governing factor so that wide changes in outside conditions have little effect on the interior.

The third group includes the department store, restaurant, ballroom, or factory in which heat from the occupants is augmented by that from the lights and power-driven apparatus. Here the effect of outside conditions is small. Corrective measures consist of a slight lowering in the dry-bulb temperature and a considerable reduction of the relative humidity.

Another valuable portion of the book is the catalog data section which describes the heating and ventilating equipment offered by the various manufacturers. The membership roll of the society, with a list of present and past officers concludes the guide.

GLEANINGS
FROM RECENT PERIODICALS

Experience Data Needed in Air Conditioning

MAN IS an indoor animal. The atmosphere in which he lives, moves and has his being, inclosed within four walls for the greater number of the hours of his life, has a direct bearing on the total number of these hours and on the pleasure he has in them. If that atmosphere can be maintained at the optimum condition of temperature and humidity for human comfort and health by the use of electricity, then why is electricity not more used for that purpose? The answer is that the way to do this is not generally known in the sense that applications of electricity to power and lighting are common knowledge.

Air conditioning is not an esoteric science. Its fundamentals have been established and are easy to understand. But its theory is not reinforced by the large quantity of experience data that is necessary for popular acceptance of the art. These data must be collected and integrated into convincing evidence by those who have a commercial interest in air conditioning—central stations and engineers. The onus of the task must be on the central stations, because they are in better position to assume it. It is the duty of central-station engineers and power salesmen to study continuously the air-conditioning installations to which their companies supply power. Only by such research can data sufficient in quantity and quality adequately to promote the art be accumulated.—*Electrical World,* April 25, 1931.

An Editor on Wheels
Stories of Interesting PLACES in the Refrigeration Industry
By GEORGE F. TAUBENECK

Kansas City

From a hatfull of impressions of Greater Kansas City, one can withdraw three pictures which would tickle the vanity of any magician: (1) the Country Club residential development, which is as worthy a piece of city planning as one can find anywhere; (2) the lazy curves of the meandering Missouri and Kaw rivers, seen from the vantage point of Cliff Drive; and (3) a composite recollection of the well-kept parks which are scattered so promiscuously throughout the twin Kansas and Missouri cities.

Self-dubbed the "City of Parks," Kansas City appears to have earned the right to that designation.

No figures are available as to the proportion of space occupied by parks to the total area of the municipality, but we'd venture a guess that it compares more than favorably with that of any other city you can name off-hand.

It is difficult to travel very many blocks in any given direction without running into a public park. What Kansas City denizens do with all these parks is a mystery, but there they are just the same.

Concomitant with the superabundant park system are large numbers of tennis courts and golf courses.

The former are especially plentiful. Moreover, they seem to be in constant use; and in spite of the quantity of both lawn and clay courts, waiting lines are common.

California native sons claim that the people out there play-out-of-doors more than in any other district of the world, save possibly the French Riviera. While we have no valid reason for questioning this boast, we'd like to nominate Kansas City for runner-up, at least, for the mass outdoor sports crown.

All Kansas City inhabitants are said to have stout leg muscles, developed from ascending and descending the not-too-gentle hills upon which the twin cities are built.

Not satisfied with this pedestrian mode of physical development, the Gateway to the West supports a first-rate athletic club, and patronizes heavily the ample supply of golf links and tennis courts.

An outgrowth of one man's carefully nurtured idea, the Country Club residential development presents a group of well matched model homes against a picturesque background of hills, winding roads, trees, neat landscaping, and occasional glimpses of the old river valley far below.

One looks in vain for sidewalks. The answer, of course, is that everybody who lives out in this tony residential section drives automobiles.

There are a few big apartment buildings, but most of the district is occupied by brick and stone homes, ranging in size from five-room bungalows to regular castles nestling in the hills.

Serving as a trading center for the Country Club development is the Country Club Plaza. Shops of various descriptions and offices of professional men are located here. All structures show the Moorish influence, and are highly attractive.

Names of the various buildings in this Plaza are as reminiscent of dark-eyed, black-shawled, rose-in-hair senoritas as is the architectural motif. "Alcazar" is a typical example.

A hold-over from a previous and more plebian period still rears its head among the galaxy of Castilian edifices, however. It is the "Brush Creek Garage."

Among the palatial homes to be found in Kansas City is the stone mansion of R. A. Long. Stationed at the top of a dome-like hill, this imposing structure has 80 rooms. Stone walls, stone outbuildings, stone arbors, and stone walks embellish the grounds.

The owner, it may be said en passant, is the proprietor of a lumber yard, and "made his pile" by furnishing the materials for wooden houses.

In the Country Club district one of the most striking homes is that of R. B. Jones, who built a fortune from insurance premiums. It is done entirely in the oriental manner, with Byzantine pillars, and decorated in the smoldering hues of Mediterranean villas.

Show spot of the city is the Liberty War Memorial, which is a heavy piece of bizarre architecture and sculpturing, consisting of a wide concrete base at the head of a flock of steps, a small vestal temple at each end of the base, an obelisk in the center (within which is an elevator—manned by a statistically-minded guide—and a circular staircase leading to the observation tower at the top) and two guardian sphinxes.

The latter animals are veiled with monstrous slabs of concrete. Peeping over the edge of his veil, the sphinx facing the East is hiding from the Horrors of the Past (the World War). Entirely obscured is the face of the sphinx facing West, who is shielding his vision from the Horrors of the Future.

Raised by popular subscription, the funds expended for the construction of this memorial ran into the millions.

Also worth seeing are the Indian Scout, the Pioneer Mother, and the tomb of Col. Swope. The latter simple edifice rests against a steep hill at one end of the mammoth park he gave the city.

Pausing at the top of a knoll to survey the territory beyond, the Indian Scout is a bronze equestrian statue which has been standing since 1901.

The Pioneer Mother is a piece of sculpture which is almost as famous as the Indian Scout. It depicts one of the hardy women who followed the retreat of the western frontier, and who helped adventurous husbands tame the country of which Kansas City is the metropolis. Tugging at her skirts is a typical child of the wilderness.

Teeming with industry, Kansas City owns a gamut of industries which range from 19 busy packing houses to the National Calliope Corp. Both Sears, Roebuck & Co. and Montgomery Ward & Co. have factories and branch houses here.

Among the large packers who maintain offices and plants in Kansas City are Armour & Co., Swift & Co., Cudahy Packing Co., Morris & Co., Wilson & Co., and Van Camp Products Co.

Business seems good in Kansas City, and here, as in many other western cities, the depression does not appear to have left so disastrous a wake as it did further East. Unemployment exists in Kansas City, as elsewhere, but the problem is not acute.

The spirit of Kansas City is hard to define. It has not been in the adult stage long enough to acquire a ripe old flavor of its own, and it has been too busy building and transacting business to gather traditions or peculiarities.

It has something of the drive and dash (and much of the odor) of Chicago, a trace of the civic self-consciousness of Indianapolis, and something of the architectural pride of Dayton.

Lively, alert, aggressive, and forward-looking, it is most assuredly the Home of the Hustler.

Letters From Readers

Alexandria, Va.

Editor:

I have read and studied the NEWS and I must say it is the most complete of any I have read. I feel that every man in the service field should subscribe, regardless if he is working for some one other than himself.

I am asking for a little information which I will appreciate if you will furnish me.

I was recently called to service an "Allison" household unit, and I found that all the tubing had been broken, and the gas escaped. As this is the first Allison I have been called on to service, I am asking if you will give me the name and address of the manufacturer so that I can write for a manual or any information as to the kind of gas used in this box.

HERMA L. MORAN.

Answer:

The Allison electric refrigerator uses ethyl chloride as a refrigerant, operating with 20 lbs. of pressure on the high side.

These machines were built first by the Domestic Electric Refrigerator Corp. of New York City, and later by the Holmes Refrigeration Co. The American Hardware Stores of Hartford, Conn., are reported to be furnishing repair parts.

Editor.

Sound-Proofing, Better Belts, Motors Reduced Refrigerator Noise, Tanger

By C. H. Tanger, Servel Corp.*

THE problem of noise in compressors is so important in the design and manufacture of the present day electric refrigerator that I believe it advisable to revert first to a historical outline of what has happened in the past few years in the development of domestic electric refrigeration, in order to present a clear picture of how fast this problem has been forcibly made one of the most dominant points of refrigerator design.

Let us think back to the domestic electric refrigerator as it was designed and built 10 years ago. At that time fully 90 per cent of the domestic installations were made remote, with the compressor and condenser located in the basement, or removed to a point where its noise was of minor importance.

Compressors built at that time were either driven by means of gear reduction or flat belts with idler pulleys, which you all know were not in the least quiet. Also at that time the electric motors used on refrigerating machines were not especially developed from a noise standpoint, and as a result their starting mechanism was of the rugged type and very little concern was given to quietness. The valves of these older types of refrigerating units were all of the poppet type with every effort made in the design and manufacture to give efficiency and maximum reliability, but no thought for quietness.

With the increase of production and the advent of men from automotive lines to the domestic refrigerator manufacture and engineering field, came the next developments within the small refrigeration machine industry. This tended not only to produce quieter machines, but also to produce them in quantities and with manufacturing limits which would permit of field service without hand fitting.

Vee Belt Introduced

The first of these developments was the introduction of the Vee belt drive, which eliminated the old idler used with the flat belt, and produced a much quieter operating machine. Also at this time the first feather valves were developed and these gave much better operation from a noise standpoint.

Also with the advent of Vee belt drive the electrical motor manufacturers were required to improve their motors to withstand the additional bearing load which these belts imposed. While these motor manufacturers were making this change, they also improved the brush throw-out mechanism used with their motors; this improvement also included a reduction in the noise of these mechanisms.

The next step in the small machine industry was the introduction of the self-contained electric refrigerator on a production scale. The first of these were merely the conventional types of ice refrigerator to which were fitted bases in which the compressor and condenser assemblies were mounted.

Immediately after these were placed on the market and in the homes of the buyers, we began to hear a lot about noise. Noise at this time was merely a comparison of maximum volume. Anyone owning a self-contained electric refrigerator in those days did not have to advertise the fact to any of the evening callers.

Every effort was immediately expended in the development of mounting and suspending means to prevent the transmission of vibration from the compressor to the cabinet and to the floor underneath the cabinet. Some manufacturers used rubber, some used springs; and the results were more or less satisfactory when the unit was first installed.

A great many of these machines built at that time are still operating and operating satisfactorily, due to the fact that the owners became accustomed to the type of noise which was made and its magnitude was not such that it caused any particular hazard.

However, at this time all manufacturers were being criticised for the cost of electric refrigeration, and also the public was becoming more and more educated to its advantages—especiallly the builders and owners of apartment houses. As you know, apartments in the average apartment house are not spacious, and in many instances the electric refrigerator is placed adjacent to or within the sleeping room. Needless to say, the electric refrigerator of that date was not one which the normal person, accustomed to occasional insomnia, could sleep beside.

The companies who had been producing self-contained electric refrigerators as above described were all just entering into the production of commercial models up to and including 1,000 lbs. capacities. These manufacturers were interested in a maximum production of these commercial models, so went ahead with the development of multiple systems for use in apartments so that this noise factor would not act as a sales resistance.

It so happened at this time that there was a considerable tendency on the part of apartment house builders to put up structures which were none too permanent; especially in sizes of four to six apartments, and considerable difficulty was encountered from a noise standpoint even with multiple installations in this type of apartment.

There were also some localities which did not look with favor upon multiple installations, and the next problem placed before the refrigeration engineer was the development of a quiet self-contained unit which could be operated even in a sleeping room without disturbing the slumbers of even the lightest sleeper.

To accomplish this the refrigeration engineer contacted the acoustical engineer who was conversant with the normal problems of sound and vibration absorption. The result was the same cabinet which had been used before, a compressor whose limits were much closer than had previously been attempted on a large production scale, an electric motor whose starting and stopping mechanism was cushioned with rubber, and the walls of the machine compartment in the cabinet covered wth various types of sound absorbing materials.

Sound Absorbing Materials

Self-contained units of this type are in operation in thousands of homes today, and their service from a noise standpoint has been very gratifying to both their owners and the manufacturers. However, if the machine compartment door with its sound absorbing liner should be removed from these cabinets, the owner would be surprised to note the magnitude of the increase in noise.

In the attempt to put electrical refrigeration on a large volume basis and to remove from it the hazards of field service, the next efforts of the refrigerating engineer were concentrated upcn the development and production of a machine whose inherent design would avoid the necessity of insulating the machine from its surroundings to prevent its noise offering sales resistance.

We find that the results of the engineer's endeavors has given us the direct-driven type of reciprocating compressor operating at motor speed, the rotary compressor operating at motor speed, and the belt-driven reciprocating machine, built to limits of quietness which a few years ago were called impossible.

Let us consider some of the problems of the design of a compressor from a noise standpoint in these present machines. Its valves necessarily must be of the feather type or in the case of direct-driven compressors, of the port type which automatically open and close with the passing of the piston head, or the oscillation of the valve plate.

Next, let us consider the electrical motors used to drive these compressors with the belt-drive machines. We find a wonderfully improved repulsion induction motor whose starting and stopping mechanism is inaudible, or we find the condenser type motor with the starting mechanism only a series of contacts and electrical condensers.

With the direct-driven machines, we find split-phase motors used, for the smaller sizes, and condenser type motors for the larger sizes. Neither of these motors has any brush mechanism to make noise. With a split-phase motor, an unloading mechanism is used, either of the float type or electric magnetic type, both of which are noiseless.

Motor Hum Reduced

One of the problems with split-phase motor design for direct-driven units is that of magnetic hum, but motor engineers have overcome this problem in various ways, which have either tended to reduce the amount of magnetic hum to a satisfactory volume, or to so lower the pitch that the slight resultant magnetic hum is not objectionable.

Lubrication of the compressors of these modern refrigerating machines is also one of the things which has offered a lot of room for improvement. In the case of belt-driven machines, splash lubrication is still in use, but bearing designs have been improved to a point where a cushion of oil is maintained at all times on both connecting rod and main bearings.

With the direct-driven machines of both reciprocating and rotary types, pressure lubrication is being used. Also rather than steel to bronze for the rotating parts, we find hardened and ground steel bearings, and hardened and ground steel shafts with limits as close or closer than in the finest of automobiles.

Running clearances in these machines are not produced by "running in" as has been done for years in the automotive industry, but these clearances are ground in when the machine is first built and thousands of hours of operation are required to change these limits as much as one-tenth of a thousandth of an inch.

The suspension of the compressor and compressor unit has also been a matter of much development inasmuch as we now have to ship the compressor mounted in the cabinet so that all the dealer or user has to do is to make a simple electrical connection to a convenient outlet and the machine is ready for operation.

It is true that in almost all cases, it is also necessary for the dealer or owner to loosen or remove a few shipping bolts, but this is an operation that can be performed by anyone without mechanical tendencies.

It so happens that the latest developments of suspension or support of compressor units combines the use of rubber and springs, and this combination follows the developments and refinements of automotive practice in that in most every instance the rubber that is used is preloaded to prevent future deterioration, and in order that the cushioning effect obtained from the rubber is not dissipated in more than two directions.

Sound absorbing materials are still used on the inside of machine compartments of the belt-driven machines, but have been practically eliminated from all direct-driven machines. However, with the direct-driven machines the construction of steel domes used to house the compressor and motor has been given considerable thought, and some manufacturers use sound absorption material as a means of reducing the transmission of sound from the operating parts within the dome.

The controls used with these machines have also been subject to design modification so that even the noise of the contacts in these controls as they snap open and closed is eliminated.

The result of the continued efforts of all of us connected with the small machine industry is giving the public a machine whose noise factor is gradually approaching the vanishing point, without sacrificing any of the reliability features contained in the older models.

Today when an argument concerning the quietness of a machine arises, it becomes almost a matter of personal opinion as to which is the quietest. To overcome this there has been developed the electrical sound meter which in reality is nothing more than a radio amplifier which measures the magnitude of sound by means of a thermal galvonometer. The machine showing the greatest throw of the galvonometer needle is unquestionably the noisiest, and it is only a matter of visual comparison to settle any questions of this nature.

I have discussed only the points of design in these various developments, and have not touched upon what they mean in the way of manufacturing processes and production methods. This problem of manufacture is where a majority of our efforts will be spent in the future.

*Note: *This paper was presented by Mr. Tanger at the A. S. R. E. convention.*

FRIGIDAIRE ROOM COOLER USED IN DIAMOND ROOM

DETROIT—A Frigidaire room cooler helps to sell diamonds for Wright Kay & Co., Detroit's oldest jewelers.

The diamond room of this exclusive shop was found to be uncomfortably hot during summer months. Its discriminating clientele objected seriously to spending time in the gem room because the heat at times became almost unbearable.

Installation of a Frigidaire room cooler solved the problem immediately, according to Henry H. Wright, president of the company. He says: "We find that with this machine the temperature is reduced to a comfortable point."

Chief Field of Solid Carbon Dioxide Is In Transportation, Pearce Says

KANSAS CITY, Mo.—At present the principal field of usefulness for solid carbon dioxide is in transportation, G. T. Pearce, engineer in charge of sales of the Dry-Zero Corp. told delegates to the A. S. R. E. convention here Friday morning, May 8.

In the early stages of solid carbon dioxide's development, he pointed out, many people were overly enthusiastic, believing that it would soon replace all other refrigerants.

"Various manufacturers claimed production costs ranging from ½ to 2½ cents per lb. Now we know its limitations and uses much better, and realize that its greatest advantage is in the reduction of weight of the complete refrigerating unit. Its most important application then, should be in refrigerated cars and containers," he said.

Saves Space

"The relatively small space needed for solid carbon dioxide as compared with ice is another feature making this newer refrigerant particularly useful in transportation," he said.

The average cost of the refrigerant he stated, considering both the large and small consumers, is around five cents per lb. with some of the large users contracting for it between three and four cents per lb. However, with the production of the 20 companies now manufacturing the commodity, he believes that the price will drop some as production matches the demand.

In conclusion he claimed that a 4½ cu. ft. domestic refrigerator could be operated on solid carbon dioxide at a cost of 18 to 20 cents per day, figuring a daily consumption of six lbs. "This is a low cost, especially in view of the fact that many people would use it only three or four months in the year." A refrigerator to use solid carbon dioxide could be built in the neighborhood of $50, he averred.

Evaporation Control

After Mr. Pearce's talk, Fred McCandlish of Chicago, asked what methods are in common use for controlling the evaporation of solid carbon dioxide. Mr. Pearce replied that there are several ways, one of the approved means being to introduce insulation between the refrigerant bunker and the refrigerated compartment.

"Because of the fact that most of the refrigerating effect from solid carbon dioxide is provided when the solid changes to a gas," he reported, "little success has been achieved by controlling the air flow."

D. P. Heath of Detroit then asked if Mr. Pearce's estimate of six lbs. of solid carbon dioxide necessary to refrigerate a 4½ cu. ft. domestic box included the freezing of ice cubes. Mr. Pearce answered that it did.

The question of what limitations there are in the kind of commodities that can be shipped using solid carbon dioxide for refrigeration, was raised by W. V. Lewis of Kansas City. Mr. Pearce responded that he knew of none.

Harry Sloan of Milwaukee next asked if it is true that solid carbon dioxide is consumed as fast in cold weather as it is in warm weather. Pearce's answer was that it is practically true, because the temperature differential upon which the melting depends, is almost as great in cold as in warm weather. "However, he pointed out, by insulating the refrigerating bunkers from the surface transmitting heat, the evaporation can be controlled, and economies effected."

INSTALLS AIR CONDITIONING

DAYTON—A complete $100,000 air conditioning system has been installed in Loew's Theatre, 125 North Main St., by the Wittenmeire Co. of Chicago.

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CONSULTING ENGINEER DESCRIBES DESIGN,

Tait Shows How To Figure Necessary Refrigeration

By R. H. Tait
Consulting Engineer, St. Louis

NOT only has the modern drinking water system become a convenience which the traveling public demands of the best hotels and which tenants require in the larger first class apartment houses, office buildings, etc., but also it has become recognized as a factor to be seriously considered in the construction of mills and factories.

In dwelling quarters, the drinking water system is purely a matter of convenience and is to be regarded as a luxury, but the application of such systems to business and industrial construction is becoming increasingly general because they are time-savers and sources of comfort which properly applied to buildings or plants have been demonstrated to safeguard the health and to increase the efficiency of workers.

In short, a properly installed drinking water system will prove itself to be a paying investment in any sizeable business or commercial institution.

Inasmuch as our object here is to examine these systems from the standpoint of engineers who may design or operate such systems, rather than as potential users selling ourselves on the merits of such installations, we shall mention only briefly, just a few of the considerations which render the well planned drinking water system more desirable than the time honored iced water cooler.

Especially in summer, we require for comfort and health, frequent drinks of cool, pure water. The temperature of this water, while important to a degree in any system, becomes of importance next to purity when we consider the supply for a large office, factory, or mill.

During hot weather, water from most sources of supply to large business and industrial institutions is too warm, and it lacks the refreshing qualities of a good cool drink. The old remedy of putting ice in a water cooler is successful enough in reducing the temperature, but generally the temperature of the water drawn from such coolers is too low.

Water which is too cold cannot readily be drunk with either comfort or safety, in sufficient quantities to allay thirst. The result is that an insufficient amount is taken at each drink and this fact added to the inflamation imparted to one's mouth and throat by water which is too cold, brings the worker back to the cooler, fountain or water bucket a great number of times for a few swallows, with consequent interruptions of his task and loss of time.

In the remedying of this condition by bringing properly cooled water to the most accessable points for the greatest number of workers, lies the economy of the mechanically operated and automatically regulated drinking water system for large offices, industrial plants, factories, etc.

When water is supplied in adequate quantities to fountains, properly distributed so as to be conveniently accessable to the workers, and when the water thus supplied is maintained at a temperature which will permit the drinking of it in sufficient quantities to allay thirst completely, and at the same time not inflame and irritate the mouths and throats of those using it, workers will drink less often because on each trip to the fountain they will be able to drink all they want without discomfort.

They will be comfortable and refreshed when they return to their tasks, and therefore they will work more efficiently. They will spend considerably less time going to and returning from the fountain, and they will drink a greater quantity of water in a given time.

This increase in comfort and saving of time is a factor which increases in importance in direct proportion to the size of the office or plant, and the number of workers employed therein.

Small individually operated mechanical units, if properly regulated, will meet the requirements of small offices or shops, but they are inadequate to serve more than a few persons. The centrally located plant with a recirculating system will be found to give the most satisfactory results where a large number of persons are to be served.

Many such systems are now in common and general use, but it is undoubtedly the experience of most of us that too frequently there is something wrong with the ones which we approach as users. What is the matter with them?

Surely the design of a properly operating water circulating and cooling system should be a most elementary task for almost any engineer worthy of the name of his profession.

Yet you may judge what percentage of the designers of such systems are incapable of performing this feat, by recalling what a common occurrence it it to get from a drinking water fountain, water which is either too warm or too cold, an insufficient quantity of water due to lack of pressure, or how many times you have received a veritable shower bath when you were in search of only a few swallows. Let us consider a few of the essentials for a satisfactory system.

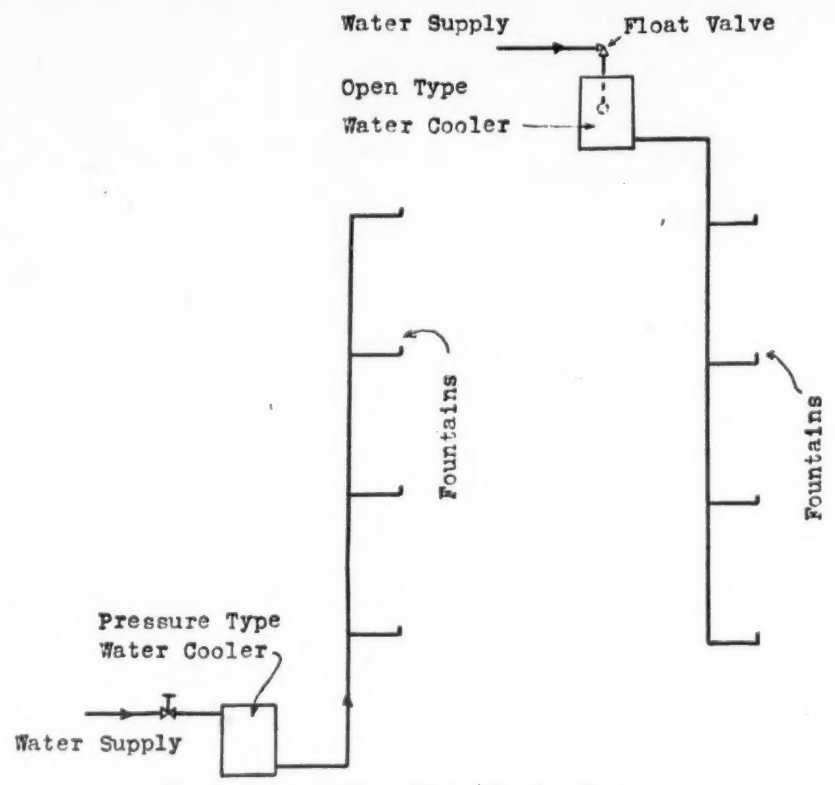

Fig. 1, Pressure Type Water Cooling Systems

Assuming that the water supplied to the system is pure and palatable to begin with, our first concern should be, to so plan and construct a system, with regard to design and material, that every drink coming from it will be at least as pure as the water which entered it.

Naturally our first requisite is an adequate supply of suitable water, the next is that the water, after entering the system shall not be subject to contamination.

Systems which serve fountains distributed over a considerable area, such as those in hotels, apartment buildings, stores, offices, and industrial plants, are practically all of the same general design.

The water cooling element may assume any of the common forms. Generally it is an open or a closed pressure type tank in which is placed an evaporator or cooling surface suited to the refrigerant used, and over, around or through which is circulated the water to be cooled.

The water circulating pump should be of ample capacity to deliver sufficient cooled water from the tank to the circulating system to keep it at the required temperature, and to provide the maximum amount of water which will be used through the fountains.

The height to which the circulating water must be raised largely determines whether a pressure type or an open type cooler is used. In high buildings, a pressure type cooler permits the balancing of the weight of water in the ascending and descending circuits so that the circulating pump has but the pipe friction to overcome, and makes possible a substantial saving in power required for the pump. The open type cooler is used on systems of lesser height.

Figure 1 shows, in a general way, two of the simplest arrangements for a small system, served by a central plant. One consists of an open type cooling tank in an elevated position above the drinking fountains to which the water runs by gravity.

The other type is practically the same in operation except that the fountains can be located above the cooler level. A closed cooler, to which the city water is directly connected has been provided and this pressure is employed to deliver the water to the fountains.

No recirculating of water is done in these systems, and the only movement through them takes place when water is drawn from the fountains. Such systems are recommended only for small installations with a few fountains grouped within a small area.

Figure 2 shows a small system provided with a pressure type water cooler to which city water is connected directly. A circulating pump supplies the cooled water to the fountains. During periods when city water is sufficiently cold, the refrigeration and circulation can be discontinued and the fountains supplied with the city water pressure.

This type of system can be used where the temperature of the buildings in winter time is not sufficiently high to render water in the system unpalatable.

Figure 3 shows a building of moderate height provided with an open type water cooler and a circulating pump. For buildings of this type or for plants covering a large area, such a system will provide an efficient and economical supply.

Figure 4 shows a typical system for a building higher than the one in Figure 3. It is provided with a pressure type water cooler and circulating pump.

In case a house tank at a higher level than the circulating system is available, the closed purge tank could be replaced by a connection from that point to the house tank, which would provide both the make-up water and the necessary air vent.

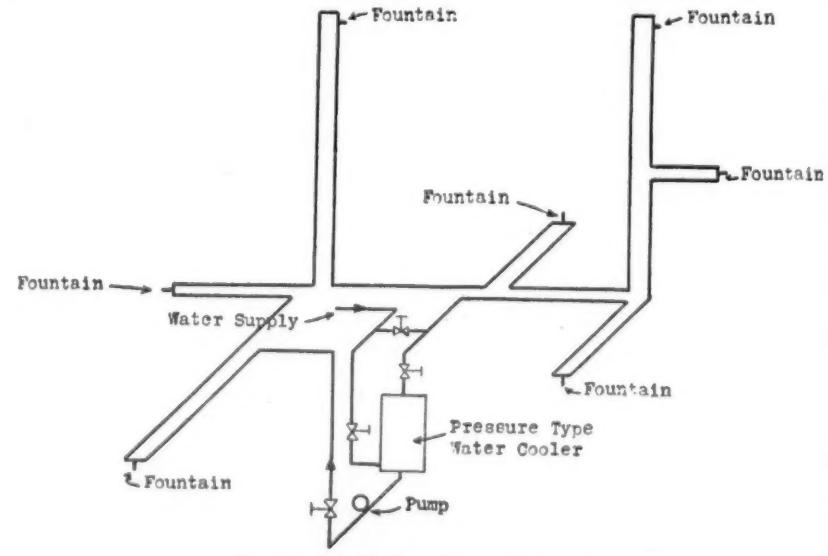

Fig. 2, Small Circulating System

Figure 5 shows an arrangement for high buildings where the pressure due to the height presents difficulties to both construction and operation. Two systems each similar to that shown in Fig-4 are used, and they are so arranged that one serves the lower half while the other provides for the upper half of the building.

(*Concluded on Opposite Page*)

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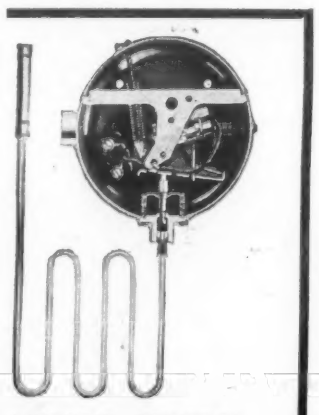

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INSTALLATION OF WATER COOLING SYSTEMS

(Concluded from Opposite Page)

The water coolers and pumps for both of the systems are placed together in the basement, and the requirements of operation and design of each system are similar to those for systems in buildings of half the height, except that provision is made for the increased pressure under which the cooler, pump and lower half of the vertical piping of the upper system will operate.

The lower part of the upper system has no service connections. The water in the vertical feed and return piping balances. Therefore the power required for circulation of the water does not necessarily increase with the height of the building, but is determined only by the amount of friction which must be overcome in circulating the water within the system.

Where desirable, the pump and cooler of the upper system may be placed at any level within the height of that system without increasing the pressure on the lower part as shown in Figure 5.

A piping system should be so designed that every fountain when opened may deliver at once, water at a uniform, specified temperature. Where a large number of fountains are to be served, and the premises permit, it is best to serve convenient groups of fountains on separate circuits, each of which is connected to feed and return mains.

These circuits may vary in length and size of pipe to suit the requirements of the part of the building served by any particular circuit, and they should be provided with shut-off valves at either end in order that repairs may be made to any one circuit, without interfering with the operation of the general circulating system.

Such systems are required in large, well-heated buildings in which the water from the fountains would be warm

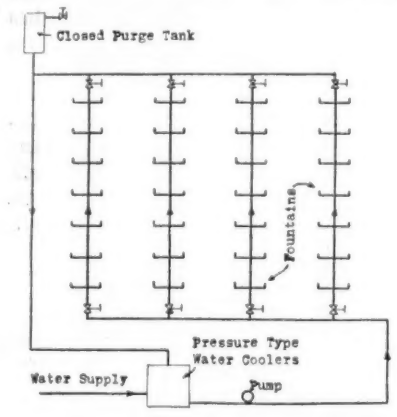

Fig. 4, Pressure Coolers Used With Circulating Pump in High Buildings.

throughout the year, regardless of outside temperature. It is important that circulating pipes from which service connections are made should run as close as possible to the fountains served.

Long dead ends and connections so made that they will trap air should always be avoided. The nuisance of having to run the warm water from an uncirculated connection, or getting an air blast through the fountain preceding or during the taking of a drink, is too common, particularly from fountains which are somewhat infrequently used.

Generally, the circulating pipe is best arranged when, as nearly as is possible, it has a continuous rise in the direction of the flow, until the circulating water has reached the highest point in the system from which it returns to the pump and cooler.

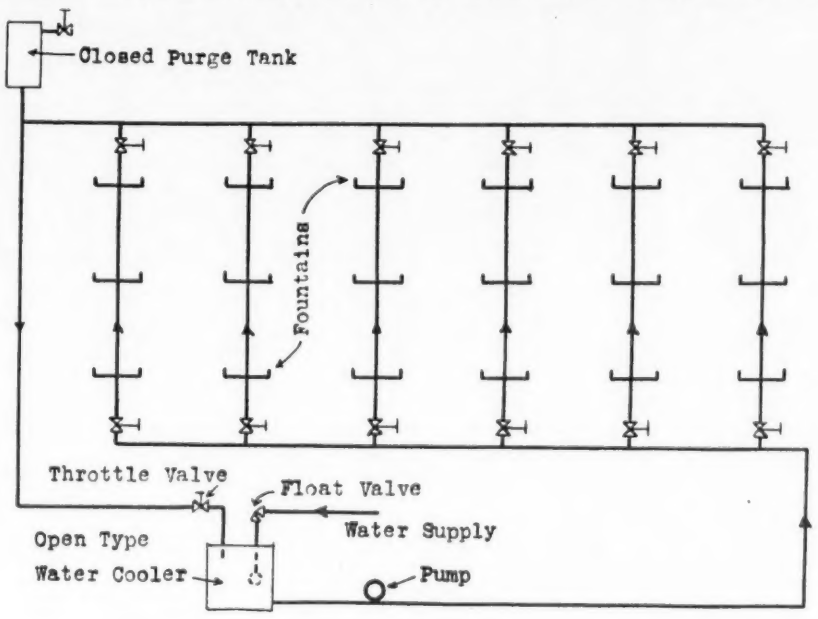

Fig. 3, Open Type System With Circulating Pump

In buildings where a number of floor levels are served, it is highly desirable that the drinking fountains on the various floors should be located vertically one above another.

This arrangement simplifies the construction of all pipe work in connection with the fountains, and facilitates the circulation of the cooled water within the system; but it is not always possible so to design a system, because it is more desirable that each drinking fountain should be so located in relation to groups of persons served by it, that it will be most convenient and accessable.

The space provided for it should be well lighted, and open to view if possible.

A drinking water system should be planned with a knowledge of all of the conditions to be met. The source, pressure, and temperature of the water supply, the number of persons to be served, the nature of their occupations, locations, floor elevations, space to be covered and the general relation of all parts of the system as to elevations and distance, should each in turn receive special consideration.

Let us assume that we are to provide a drinking water system to meet the requirements of the following described plant:

1. There is a mill where 350 workers are exposed to heat incidental to metal working. Under these working conditions the water drawn from fountains has been found to reach a rate of one quart per man hour.

2. Distributed as to location of fountains, the drinking water circulating pipe line will be 2,500 ft. long.

3. Average shop temperature 90° F.

4. Water supply from city mains at 85° F. and 50 lbs. pressure.

5. Service requirement. Temperature of water not to exceed 50° F. at any fountain, and temperature rise not to exceed 5° F. throughout the water circulating system.

The cooling apparatus and circulating piping are to be properly covered with cork insulation of ice water thickness, or other material of equal insulating value.

Heat transmission through cork covering, ice water thickness for 1 in. pipe is 0.152 B. t. u. per lineal foot per hour, per degree difference manufacturers' rating.

Circulating water to be maintained 45° to 50°.

Shop temperature 90° F.

Water mean temperature 47.5° F.

Water and air, temperature difference 42.5° F.

Water to be circulated to maintain 5° F. temperature rise in circulating line:

$$\frac{2{,}500 \text{ ft.} \times 42.5 \times .152}{5° \times 62.5} = \frac{350}{4 \times 7.48} = \text{Cu. ft. per Hr.} \quad 51.68 = 11.7 = 63.38$$

Water used at fountains:

$$\frac{63.38}{60} = 1.06 \text{ Cu. ft. per Min}$$

Or 7.93 G. P. M.

Using 1 in. standard pipe, circulating velocity will be 166.618 (feet of 1 in. pipe containing 1 cu. ft.) x 1.06 cu. ft.= 176.61 ft. per minute. Line friction calculates about 190 ft., say 200 ft. or 86.62 lbs. per sq. in. including hydrostatic lift above level of open tank cooler.

Refrigerating effect:

To maintain temperature in circulating water line:

	Tons of Refrigeration
$\frac{2{,}500 \text{ ft.} \times 42.5 \times .152}{12{,}000}$ =	1.345
To cool make-up water: $\frac{11.7 \times 62.5 \times (85°-45°)}{12{,}000}$ =	2.44
To offset mechanical heat of pump: $\frac{8 \times 8 \times 33 \text{ lbs.} \times 200 \times 42.5}{33{,}000 \times 200 \times .33}$	.25
Loss through cooler, say: $\frac{134 \times 45 \times 4}{288{,}000}$ =	.1
For safety add 10%	.41
Total refrigeration required=	4.54 tons

The power required for water circulation is, of course, determined by quantity and pressure. The engineer must determine from the cost of power and equipment, whether he will use small pipe sizes and high circulating velocity, or whether it is more economical to use lower circulating pressure with increased refrigerating loss due to increased size of pipes. The proper use of multiple circuits when possible may be of assistance in keeping down circulating pressure.

Points of importance in selecting a drinking fountain are, its fitness for the service required, whether it is of single or multiple outlet, whether it is for pedestal or wall mounting. The drinking jet should be of liberal volume, and so ejected that water falling back cannot mix with fresh water coming from the nozzle.

The nozzle should be so arranged that the lips of the drinker cannot come in contact with it. The general design and material should make as simple as possible the cleaning and keeping of it in sanitary condition and appearance. The water faucets should be substantial and self-closing.

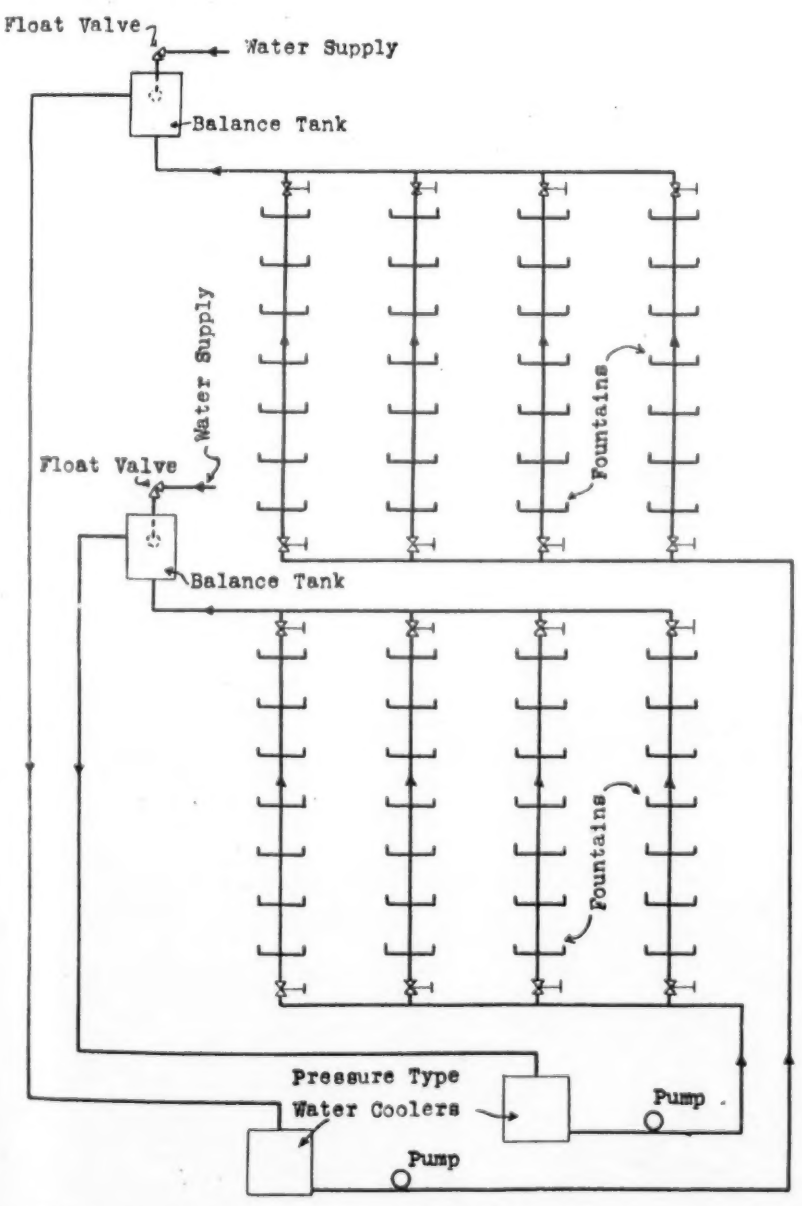

Fig. 5, Separate Systems for Upper and Lower Floors of Building

Summerheat Offers Portable Burner

DOWAGIAC, Mich.—A new portable oil burner, which can be set in front of the boiler, connected with a light socket and ignited, has been recently announced by the Summerheat Corp. of America.

It is set upon a pedestal, and is of all-aluminum construction. Oil is fed to the burner from interchangeable bottles set behind the burner proper. Automatic control is secured by use of a thermostat.

Where a permanent installation is to be made with larger oil storage, the bottles can be used until the storage tank is installed, after which the bottles may be used for emergency fuel supply. It may be used in all types of heating plants, and is made in only one size and model.

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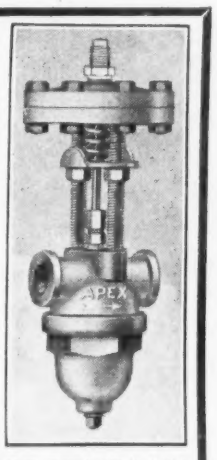
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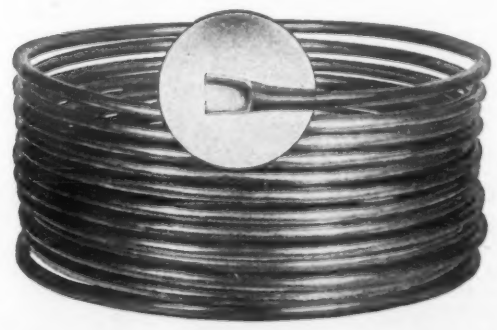
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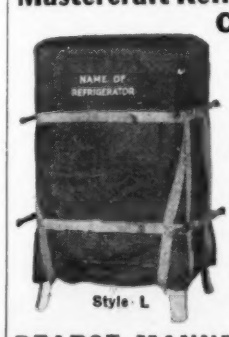

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ENGINEERING PERSONALITIES

By GEORGE F. TAUBENECK

A. H. Baer

Listed as sales manager of the Frick Co. of Waynesboro, Pa., Alvin H. Baer is more than just that. He is an expert in public relations.

Industry committees which include Mr. Baer are as common as interlocking directorates. Years of cooperative service in the refrigeration industry have made him invaluable as an arbiter, as a diplomat, as a coordinator.

He is not large, has smooth gray hair, talks quietly and soberly, has an unruffled mien and attitude, and possesses a general air of detachment. Although no longer young in years, he can stay up as late as the most confirmed night owl, and he still retains a youthful elasticity of mind.

* * *

Glenn Muffly

Warmingly friendly and human, Glenn Muffly is perhaps as well liked as any engineer in the refrigeration industry.

His low chuckle, his lively interest in people and ideas, and his omnipresent midget cigar ("Admiration" is the brand—this is not a paid adv.) are known and welcomed wherever he goes.

The personal popularity of Copeland's senior engineer is matched by the respect accorded his engineering knowledge. In the automotive and aircraft engine field, as well as in the refrigeration industry, he is recognized as an authority on design.

When he talks, other engineers listen. And when he listens, the engineers who are talking make sure of their facts.

Mr. Muffly has a definition of the term, "invention," that deserves a place alongside the immortal elucidations of "news" and "phenomenon."

He states it something like this: Supposing the problem were to seat 12 persons in a room which contains only six chairs. If the problem is solved by bringing in another half dozen chairs, that isn't an invention—it is simply a new arrangement.

But, if one could figure out a means of placing two persons in each chair without crowding, that would be an invention.

Just to jog your memory about the other two above-mentioned definitions:

NEWS: If a dog bites a man, it isn't news. But if a man bites a dog, it is news.

PHENOMENON: If you walked into a field and saw a cow, that wouldn't be a phenomenon. If you found a thistle there, that wouldn't be a phenomenon, either. Nor would it be a phenomenon if you located a skylark up above. But, if you saw a cow sitting on a thistle, singing like a skylark, *that* would be a phenomenon.

In the pursuance of his work, Mr. Muffly finds it necessary to read many patents. After a great deal of observation and reflection on patents in general, he has arrived at an interesting method of saving time. He reads only those which have short descriptions.

The long ones, he declares, one can always "get around." Only those which tell their story in a few words are really important.

"An ideal refrigeration patent," says Mr. Muffly, "would be a patent on a 'device to move heat'."

His little pet peeve is to find a drawing for a patent which includes lines unwittingly added by the artist, stopping the grant of other "potentially good" patents. It happens frequently, he finds.

* * *

A. W. Oakley

Tall, dark, quick-moving, A. W. Oakley, engineer for the Merchants Refrigerating Co. of New York City, is a commanding figure when standing in front of an assemblage.

He has a resonant voice and a confident manner, in combination with a ready flow of language and a nimble comprehension of the situations in which he is placed.

Off the rostrum he is smiling, amicable, and understanding. Engineering is his profession; but should he ever choose to desert it, he has the native equipment requisite for a public personage.

George Bright

Big, sturdy, genial, hearty, colorful, George Bright is the master politician of the refrigeration industry.

His is the ever-ready glad hand, the hail-fellow-well-met expression, the heart-melting guffaw, and the sympathetic understanding. He has boon companionship always on tap.

A defender of the faith for the ice-interests, he is also the friend and apparent well-wisher of the electric refrigeration industry. Large or small, old or young, George likes them all.

His political procilivities are entirely natural. He likes people just as he likes golf.

Refrigeration he knows from 'way back when, and he has made his knowledge pay good pecuniary dividends.

* * *

David Fiske

Especially when he wears knickers, David Fiske reminds one of a small boy grown up before he realized it. He has a boyish smile, an unlined face, and a brightly healthy complexion. The close-cropped mustache is the only note of age in his physical set-up.

The A. S. R. E. secretary is a friendly fellow, as association secretaries should be. More important, he is energetic and takes the responsibilities of his position extremely seriously.

At Kansas City he was constantly on the job, keeping solitary vigil over the archives, jealously guarding the sacred prerogatives of the society, and keeping everybody happy.

If there were any moments to waste, he couldn't see them; and if there was anything else to do besides attend to business, he couldn't see that, either. He presented a complete picture of a Man At Work.

* * *

Harry Williams

All was not quiet on the western front in the summer of 1929. It was then that Arnold H. Kegel and his associates in the Chicago Health Department were playing to big galleries in the City Council chambers, attempting to put over a refrigeration code.

Councilmen, trying to paw their way through the unfamiliar subjects of refrigerants, valves, multiple and single unit systems, risers, and stuffing boxes, demanded the testimony of experts. The electric refrigeration industry, encamped there en masse, furnished the expert witnesses.

Among these were the scholarly, soft-spoken J. B. Churchill, and the stormy, silver-haired Fremont Wilson. Others testified, were disputed.

Speaking as one with authority, Harry Williams of Frigidaire related the story of refrigerants in language simple enough for the impetuous councilman to grasp, in detail comprehensive enough to hold the attention of men who had devoted their lives to the study of gases.

That hour was not the beginning of the recognition of Williams as an authority on refrigerants. Even then his development of F-12 was being noised about. But the occasion probably provided as dramatic a setting for a public appearance as any he will ever have, and he rose to the occasion.

Williams is small, slight, smooth, and silent. Notwithstanding his modest nature, he is not at all retiring. He "mixes" well, plays easily and naturally, chats pleasantly, and in many ways belies his capacity as a research chemist.

* * *

C. H. Tanger

People who come from Evansville seem to extract a good time out of life.

Joe Cook (who never lets one forget he is from Evansville), appears to enjoy his tap dancing and the operation of his novel invention for striking a triangle in "Fine and Dandy" as much as the most ribald patron of that show.

Sam Vining is like that, and so are a great many others from the southern Indiana industrial city.

C. H. Tanger dopes out engineering problems for Servel down in Evansville, and has caught a great deal of the gusto with which his fellow townsmen greet life.

Nobody had more fun at Kansas City than did Tanger, and yet he had always uppermost in his mind the proper delivery of his paper, "The Noise Problem in Compressors."

He does not make special efforts to find amusement, but seems to enjoy to the hilt whatever comes along his way.

* * *

John Wyllie

Polished and suave is John Wyllie of Kelvinator. Those who would have us believe that engineers are often rough-hewn fellows sans valet service may be shown Wyllie as Exhibit A in refutation.

He is a young man of "average" size, scrupulously neat appearance, and cordial countenance.

Should Lord Chesterfield return to this vale of wrath and tears, and be made John Wyllie's foster father, the famous preceptor would need write none of his immortal letters of advice.

* * *

E. M. Dodds

All present agreed that the job of handling the aggregation of refrigerating engineers who gathered at Kansas City May 6, 7, and 8 was handled as smoothly and efficiently as every refrigeration salesman will tell you his unit runs.

E. M. Dodds, president of the United States Cold Storage Co. of Kansas City, was the amiable gentleman who set up the convention machinery and kept it running in a bath of oil.

As you can discover by looking at his picture elsewhere in this section, Dodds looks like a president. That picture tells the story much better than words can do.

Nevertheless, it should be augmented with a kind phrase or two for his effortless management of details, and for his ability to pick good dancing acts and attractive hostesses.

* * *

Crosby Field

One of the best raconteurs present at Kansas City was Crosby Field, president of the Flakice Corp. of New York City.

Affable, loquacious, well-groomed, he talked entertainingly about business, about engineering theory and problems, about industry conditions.

He drew pictures and diagrams. And he regaled table neighbors with yards and yards of anecdotes. The one about himself, the horse, and the sheriff's daughter was a winner.

* * *

Knight, Forsyth, Bloom

Hailed as the young man who had done much to develop the paper insulation adopted by General Electric at the beginning of this year, J. L. Knight of Erie, Pa., was the center of considerable interest at Kansas City.

His talk drew the inexorable grilling and cross-examination which is so common in meetings of refrigerating engineers, but he weathered the attack with flags flying. He had his facts, and he stuck to them.

Tall, dark, serious, poised, he gives an impression of utter sobriety, and of having thorough-going habits.

Paul J. Forsyth, Cincinnati branch manager of the Wagner Electric Corp., probably looked more like a genuine engineer than any man at the Kansas City conclave.

Short-cropped gray hair, penetrating eyes, the mouth of a dreamer, nervous movements, and a proclivity for examining all sorts of things that come into his sight, help him match the mental picture one has of the engineering type.

A third man at the Kansas City convention possessed engineering earmarks as conspicuously as did Knight and Forsyth. S. C. Bloom, consulting engineer of Chicago, was the man.

He is short, walks determinedly with head forward, and has stubby iron hair.

He examines all premises empirically, demands to be "shown" and maintains an attitude of skepticism until all the returns are in; yet he can become enthusiastic over an idea when he is convinced it is sound.

And he is, as conventioneers will tell you, a topping "goodfellow."

* * *

R. H. Tait

One of the most important speakers on the Kansas City program was R. H. Tait, consulting engineer from St. Louis. From the depths of many years of experience in the refrigeration industry, he withdrew a deal of pertinent material on water cooling.

From the standpoint of a reporter, his manner of delivery was almost ideal. He spoke slowly, distinctly, and gave his words a chance to sink into the memory of his hearers and take form on notebooks.

He is a veteran of the industry, and looks it. One word sums up his facial expression: benevolent.

* * *

H. J. Krampe

A proponent of company loyalty is H. J. Krampe of the Armstrong Cork Co., Lancaster, Pa.

He himself has been with the Armstrong organization for some 19 years, and points out that his company has an unusually fine record in the matter of holding employes over a long period of years.

Armstrong men who have been affiliated with the company less than five years are raw rookies in the service, he declares, and veterans of decades are not uncommon.

This continuous service for one firm, which Krampe advocates, seems to have agreed with him. He still appears quite youthful, and has the energy which normally accompanies the early twenties.

* * *

Pearce, Clements

When F. W. Rabe of the Anheuser Busch Co., St. Louis, failed to arrive in Kansas City for the final session of the engineers' convention, Gale T. Pearce, engineer in charge of sales for the Dry-Zero Corp. of Chicago gave a first-class demonstration of how a pinch-hitter should act.

He did not read his speech, but talked extemporaneously. As in the case of Mr. Tait, Pearce's talk was a joy to reporters.

Pearce is a salesman, a bit of a politician, and very much an engineer—all rolled into one. His talk was questioned, just as many of the others were probed, but he stood his ground firmly.

Solid carbon dioxide applications, upon which he spoke, seemed to be home territory for him.

* * *

A. L. Clements, superintendent of Dry-Zero factory, refuses to estimate production potentialities of his plant any more. Its output has been increased so many times under pressure that Clements no longer believes in limits.

There are always a few new tricks which will come to mind in emergencies, Clements declares, and experience has taught him that what was considered impossible yesterday is incorporated into the regular schedule today.

Clements is a high-strung, wiry individual with an intense devotion to his job and much enthusiasm for his fellow workers. Of his factory he is almost as proud as he is of his two small children.

* * *

A. W. Archer

To Arthur W. Archer, Kansas City architect who arranged and managed the A. S. R. E. golf championship tournament, came complaints that his Indian Hills Country Club course was difficult.

Nobody in the tourney broke a hundred. R. W. Ayres, who won a golf bag for having the lowest score, could do no better than 102.

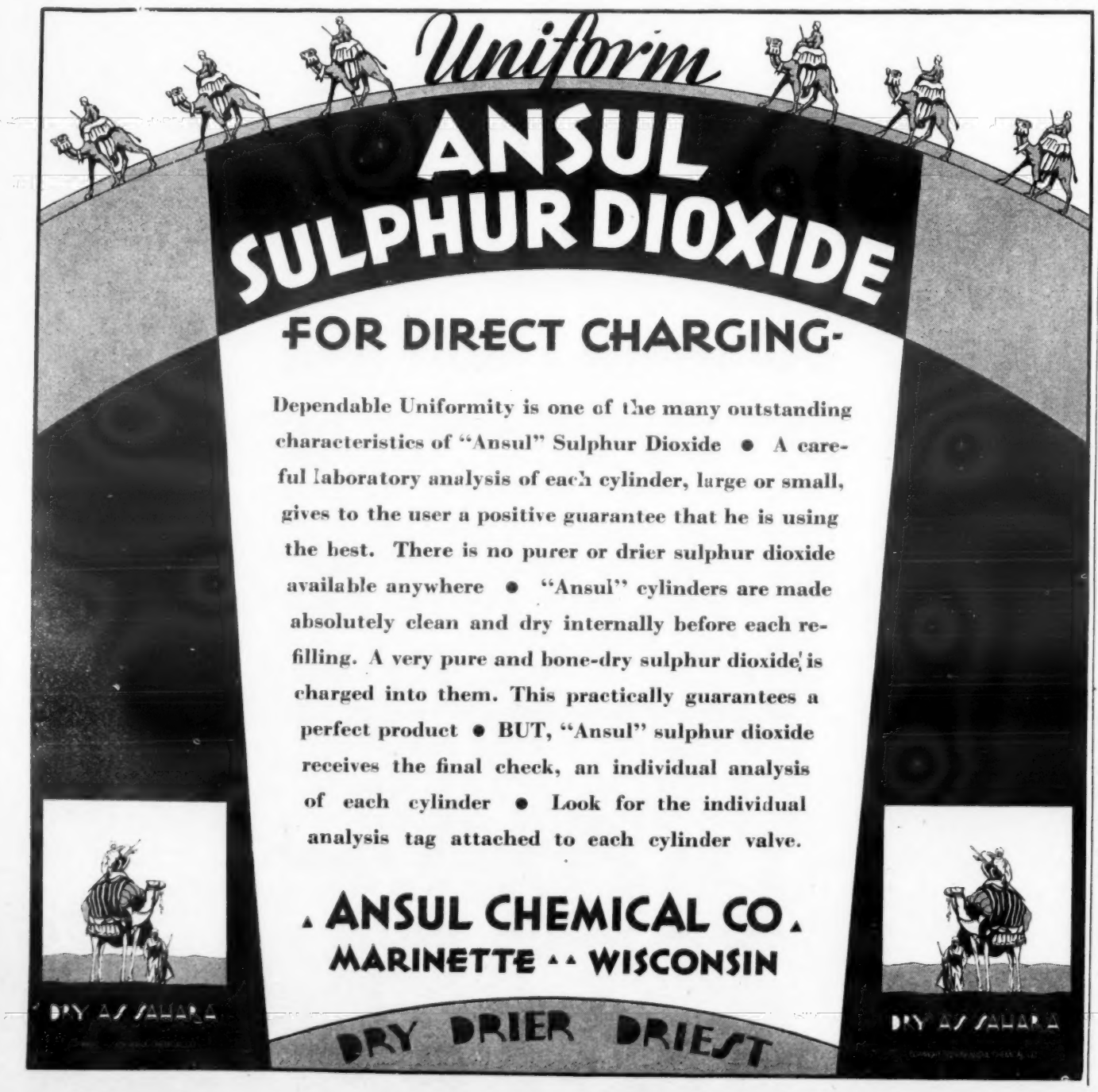
In answer to the beefing, Archer recounted the yarn about the chap who was taken by a friend to play on a strange course.

The visitor teed up a ball, took a lusty swing at it, and missed.

He turned around, grinned at his friend, took another stance and another swing, and missed it again. After the third empty swish, he remarked to his host:

"Gee! You sure have a tough course."

And with that little tale, ladies and gentlemen, we bid you a pleasant good-night.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CARRAWAY DESCRIBES AUTOMATIC CONTROLS

KANSAS CITY, Mo.—Refrigerant controls for unit type coolers have recently been developed that will remove the frost from the coolers when it is accumulated to a predetermined thickness, T. W. Carraway of the Schwitzer-Cummins Co., Indianapolis, declared before the Wednesday morning session of the A. S. R. E. convention.

The first of the systems described by Mr. Carraway uses a thermo-valve and magnetic stop valve to control the refrigerant, as shown in Fig. 1. Above the diaphragm of the thermo-valve is a chamber, connected through a small flexible steel tube, with a thermal sensitive element installed in the suction line.

In operation, the two chambers and the connecting tube are charged with ammonia from the high side, and are then isolated from the main ammonia system, he said.

"The system then becomes closed, the pressure depending directly upon the temperature of the out-going gas in the suction line. The thermo-valve is controlled by the temperature of the suction gas," Mr. Carraway explained.

Frost removal is accomplished by a small vane swinging in the lower portion of the evaporator, with a mercury tube fixed to its base. In normal operation, the air blast holds the vane at a slight angle; the switch is then closed, holding the electrically operated valve in the suction line open.

With the accumulation of frost on the cooling coils, the air passage becomes restricted until the vane drops, breaking the circuit in the mercury tube. "This closes the suction line valve electrically, and it remains closed until the frost melts enough to allow sufficient air flow to raise the vane. The mercury defroster switch makes contact, re-opening the valve in the suction line, and

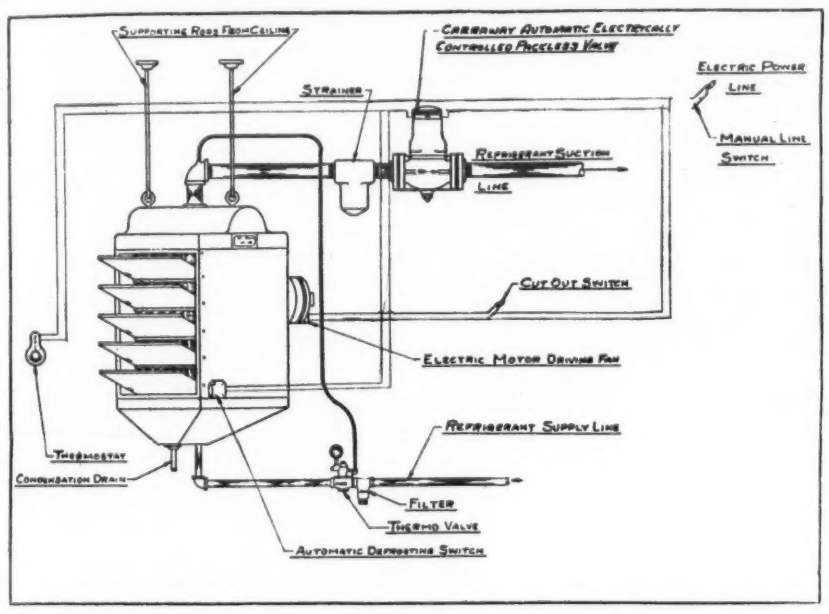

Fig. 1, Thermo-Valve and Magnetic Control of Refrigerant.

allowing the refrigerant to flow again," he said.

Mr. Carraway then turned to a description of a high pressure float valve for use with one evaporator and one refrigerating machine. This valve uses a vent tube which prevents it from becoming gas bound, and makes it possible to install the valve at any height, above or below the cooler. The entire charge of the refrigerant need not exceed the capacity of the evaporator, according to Mr. Carraway.

He next described a unit cooler installation as shown in Fig. 2 using a float switch for controlling the liquid level. This system renders the cooler independent of the influences of other evaporators on the same high side, he pointed out, and permits the liquid receiver to maintain a reserve supply of refrigerant.

Located at the top of the evaporator head, the float switch actuates a magnetic liquid stop valve which controls

Controlled With Float Switch

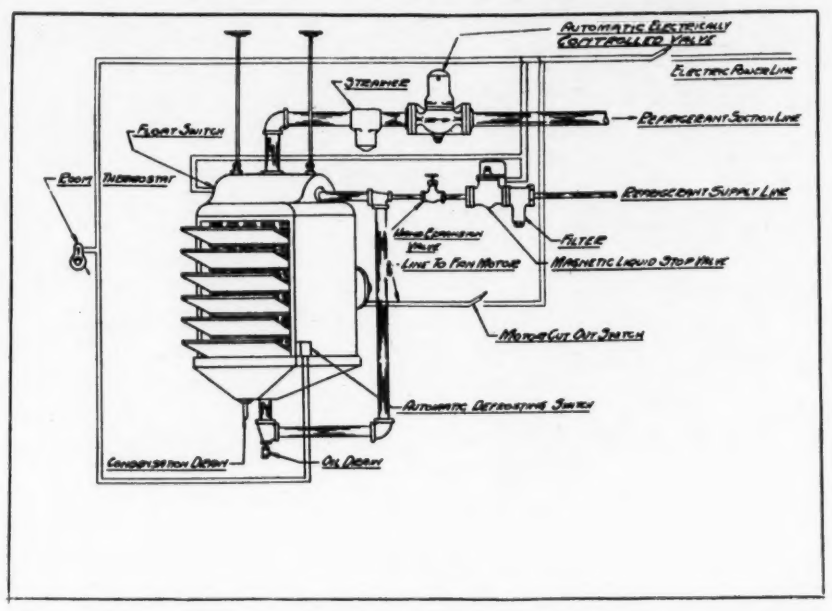

Fig. 2, Float Switch Regulates Refrigerant Level Regardless of Other Evaporators on System.

the liquid level, he said. "The hand expansion valve serves the same purpose as a fixed orifice," he continued. The room thermostat actuates the electrically controlled valve in the suction line Normally, the circuit is closed, the electro-magnet in the automatic valve in the suction line holding the valve in the open position.

"When the temperature drops to a pre-determined point, the thermostat switch opens the electrically controlled valve closes, stopping the evaporator action. The fan continues, preventing stratification of air in the room," he stated.

The operation of a circulating brine system with two unit coolers directing the air in a circuit around a storage room was next explained. Here the coolers are controlled by a thermostat, a defrosting switch operating the electrically controlled valve.

"The brine circulates when the thermostat switch is in the contacting position, holding open the automatic valve in the supply line. When the temperature lowers to a certain point, the thermostat switch opens, closing the valve in the supply line," he explained.

"The defroster switch remains in a closed position during normal operation, and opens the circuit, regardless of the thermostat, when sufficient frost accumulates to lower the vane to a vertical position. The heat of fusion given off in changing the liquid condensate to a solid prevents temperature rise in the room during the defrosting period, by re-absorbing the heat required to change the frost into a liquid," he concluded.

MYAIRE BEVERAGE COOLER HOLDS 12 BOTTLES

ONAWA, Ia.—Production of an all-metal and porcelain bottle dispenser, equipped with Frigidaire, has been announced by M. W. Myers. This new "Myaire" holds 112 bottles at a time and will cool six to eight cases a day from 80° to 40°. The cabinet itself is trimmed with chrome plated metal with porcelain panels.

LOS ANGELES SERVICE FIRMS MERGE INTO ONE COMPANY

LOS ANGELES—Announcement has just been made of the merger of the Associated Refrigeration Service, the California Refrigeration Service, and the Southwestern Refrigeration Corp., Ltd., all of this city. The new company is to operate under the name of the latter organization.

Its offices are located at 4685 Hollywood Boulevard, Hollywood. C. J. Kays, formerly of Frigidaire is manager; Karl W. Jenter is assistant secretary and treasurer; A. L. Lafferty, at one time with Kelvinator is service superintendent; Harry McConnell is superintendent of installation; and John A. Barrett is in charge of dairy service and installation. Barrett was formerly with Servel.

In addition to furnishing 24-hour service, and in supplying parts for machines, replacements, and new equipment, this company has taken over the representation of Leonard refrigerators in Hollywood.

CISSELL SUPERVISING SERVEL JOBS IN PORTO RICO

EVANSVILLE, Ind.—W. F. Cissell, service representative for the commercial division of Servel Sales, Inc., left that city April 28 for San Juan, Porto Rico, to supervise installations of Servel commercial electric refrigeration equipment in that country, according to an announcement by C. L. Olin, commercial service manager.

Seventy-seven jobs have been ordered installed at San Juan, 29 of which are now in operation, while others are awaiting completion of buildings there, it was said. Cissell expects to be in Porto Rico about three weeks, Olin stated.

ARMCO APPOINTS R. F. MEHL TO RESEARCH STAFF

MIDDLETOWN, Ohio.—R. F. Mehl, superintendent of the division of physical metallurgy of the Naval Research Laboratory, has been appointed assistant director of research of the American Rolling Mill Co. here.

He will be in charge of the physical science department of the Armco laboratories, and will take up his new responsibilities Sept. 1.

Mr. Mehl has written on many subjects, such as preparation of pure alloys, aluminum-magnesium alloys, vacuum apparatus, refractories, compressibility of alloys, and crystal structure and constitution of cadmium-mercury alloys.

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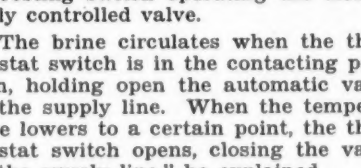

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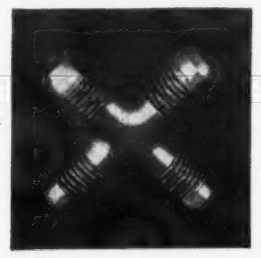
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Heath Cites High Heat Rates, Low Cost Requisites of Good Evaporator

KANSAS CITY, Mo.—The ideal evaporator should provide a maximum overall coefficient of heat transfer, gas tightness, strength, low cost, resistance to corrosion, ease of defrosting, cleanability, and flexibility, D. P. Heath, consulting engineer of Detroit, told delegates to the A. S. R. E. convention here in the Thursday morning session, May 7.

Mr. Heath discussed design and constructional features of both the dry systems of evaporators, which he classed as those generally having refrigerant passageways in series and utilizing only saturated or wet gas, and the flooded evaporator systems, which are those with passageways usually in parallel, and containing a quantity of liquid refrigerant.

Mr. Heath contended that the requirements for an evaporator are best met by the welded steel sheet design, and proceeded to discuss this type at some length. "Let us consider a flat walled evaporator formed of metallic sheets corrugated by rolling or stamping, and assembled into a receptacle by the welding process," he said.

"The internal pressure of such a flat evaporator necessitates fixing together adjacent flat walls of the receptacle between their peripheries, if the walls are to remain in shape. This could be done by riveting, soldering, or copper brazing at contiguous portions of the walls between the corrugations," he pointed out.

This construction is very good with regard to heat transfer qualities, he claims, as it provides contiguous flat portions of sheet metal between the corrugations, the flat portions serving as integral heat absorbing fins. "When the evaporator is used in a flooded system, the refrigerant is spread out in a thin film, and a positive circulation of the liquid can be effected through the corrugations and the headers to maintain ebullition," he claims.

In tracing the design of a flooded type domestic refrigerator evaporator with "L" shaped refrigerant passageways, Mr. Heath approximated the total outside surface required, by assuming an average temperature drop between the evaporator liquid and the box air of 45° F., a heat transfer coefficient of 2.5, and box leakage of 250 B. t. u. per hour for a 5 cu. ft. refrigerator in a 100° F. room. The outside surface, he calculated should be about 2.2 sq. ft., with an evaporator depth of 10 to 12 in.

"Corrugations may be placed in this outer sheet to provide ample space for the circulation of liquid refrigerant and gas bubbles, and a horizontal header may be arranged to communicate with these corrugations," he said. He suggested a radius of 5/32 to ¼ in. on centers of 13/16 to 1 in. for the corrugations, considering the ebullition requirements, and with the view of using light gage steel sheet.

The necessity of properly returning oil from the evaporator to the compressor must be kept in mind, he warned, and also the liquid level change which occurs during the idle period of the refrigerating machine, when a high side float is employed to control refrigerant flow.

"With a high side float," he explained, "dished plates may be welded permanently in both ends of the gas dome formed by the inner and outer sheets, but with a low side float a ring is welded in one end of the dome to receive the fixed or the removable cover plate carrying the float mechanism."

He advised the use of 18 or 20 gage steel for this type of evaporator, reminding his audience that if the unit is to be baked with porcelain enamel, that special enameling steel must be used.

"After welding the corrugated evaporator structure, it is given impact tests, and an air test under water at a pressure equal to three times the maximum allowable working pressure," he said.

"Flat vertical corrugated steel evaporator plates are now being used in ice cream cabinets, and have a place in the soda fountain field," Mr. Heath believes. He suggested a multiple arrangement of rectangular vertical corrugated evaporator plates for brine coolers in the manufacture of ice, and for natural and forced draft room coolers. "These plates are particularly adaptable as ice plate shelves in meat and other display cases for frozen foods, candy, etc.," he concluded.

Ice Melting Rates Increase With Humidity

KANSAS CITY, Mo.—Experiments conducted at the University of Tennessee demonstrating that ice melting rates increase with increased humidities, were explained with their resulting data, by Paul W. Scates of that University in the Friday morning session of the A. S. R. E. convention. He also presented evidence indicating that the heat transfer rates are largely dependent upon what he termed a "wetted surface," or condensation of moisture from the air.

"We can assume that the melting rate of ice is directly proportional to the heat transfer rate," he said in discussing the charts presented as results of the experiments. "Apparently, the heat transfer rate is not directly proportional to the heat content of the air, for if it were, the curves would follow a straight line."

He pointed out that for constant velocity 80° F. temperature, the exterpolated values of melting rate are constant up to 17½% humidity. "This 17½% is the saturation point for 80° F. temperature air passing over a surface at 30° F. temperature, the temperature of the ice.

From the 17½% humidity point, the melting rate increased rapidly with the increase of humidity, with the melting rate from 75 % to 100% relative humidity increasing faster than from 25 to 50%," Mr. Scates said.

"This leads us to consider heat transfer rates as being principally dependent upon what we might call a wetted surface. When warm air is passed over a cold transfer surface, in this case over ice at 30° F. temperature, the heat transfer rate increased with the humidity after the dew point of the mixture has been passed in the area surrounding the ice surface," he continued.

"This indicates the presence of a constant watered film over the ice which is being constantly removed. The rate at which this water is removed, or the depth of the film, is dependent on the percentage humidity and air velocity," he said. This faster rate of increase in the ice melting rate from 75 to 100% than from 25 to 50% humidity will become less and less as the humidity increases, Mr. Scates believes, until that per cent humidity is reached which corresponds to the dew point of 80° air.

The theory that the more rapid the removal of the condensed water, the higher the heat transfer rate, is borne out by experiments showing faster melting rates at higher velocities than for low velocities, he claimed.

"We may consider the ice block as a condenser," he pointed out, "the rapid removal of water at higher velocities, giving the ice a greater condensing capacity. When this is the case, the ice melting rate will be greater, since for every pound of water condensed, 1047.1 B. t. u. the latent heat of vaporization of one pound of water vapor in air at 80° F., are transferred directly into the melting of the ice."

In conclusion, he pointed out that the highest humidity attempted in the tests was 95%, because small thermometer differentials made accurate humidity reading very difficult above that point.

Knight Reveals Thermal Conductivities Of New G. E. Paper Insulation

KANSAS CITY, Mo.—Thermal conductivities of the paper insulation which the General Electric Co. has adopted for its electric refrigerators, were presented by J. L. Knight of that company before a group of engineers here Thursday morning, May 7.

Although paper has not been generally regarded as a possible material to be used efficiently to insulate refrigerator cabinets, Mr. Knight began, it has long been recognized as having some insulating value.

Air at 60° F. has a conductivity of about 0.17 B. t. u. per hour per sq. ft. per degree F. per in., which is considerably lower than that of any commercial insulant now known, he claimed.

"Thus, if heat were transmitted through air by conduction alone, a single wide air space, sealed up to exclude moisture, would provide a good practical insulation for a refrigerator cabinet. As W. J. King recently pointed out, the function of insulation is to reduce radiation and convection without materially increasing the conduction due to the presence of solid matter," he continued.

Radiation may be reduced in either of two ways, he pointed out; first, by using surfaces of low emissivity, such as polished metals; or second, by interposing a number of partitions in the heat path.

Suppresses Convection

"The latter method is also effective in suppressing the convection," he said, "because as the width of the successive air spaces is reduced, air circulation is progressively restricted until at a spacing of about 1/10 in. it is practically stopped. With convection thus eliminated, it is an easy matter to calculate the effective conductivity of a series of these 1/10 in. air spaces," he said, and proceeded to solve a problem assuming that two surfaces, three inches apart, having temperatures of T_1=540° absolute (80° F.) and T_2= 500° absolute (40° F.) are to be insulated.

With no partitions, the radiant heat transfer may be calculated from the Stefan-Boltzmann formula he showed, or $Q_O = 17.23 \times 10^{-10} E [T_1^4 - T_2^4]$ B.t.u. per hr. per sq. ft.

For parallel plane surfaces, the effective emissivity E, he said, is expressed as

$$E = \frac{E_1 E_2}{E_1 + E_2 - E_1 E_2}$$

Where E_1 and E_2 are the emissivities of surfaces one and two respectively.

"Letting $E_1 = E_2 = 0.93$, we have E =0.87 and Q_O=33.7 B. t. u. per hr. per sq. ft.," he continued. "Now let us consider a wall thickness of 3 in. with a series of partitions. In general, if n partitions are interposed in such an air space, the radiation will, accurately enough for our considerations, be reduced to

$$Q_N = \frac{Q_O}{n+1}$$

"Thus if there are 30 1/10 in. spaces, $n = 29$ and

$$Q_N = \frac{Q_O}{29+1} = \frac{33.7}{30} = 1.12 \text{ B. t. u per hr. per sq. ft.}$$

and $K_R = \frac{1.12 \times 3}{40} = .0838$ B. t. u. per hr. per sq. ft. per ° F. per in."

He next assumed that partitions consisting of sheets of paper, 0.0025 in. thick, spaced by corrugated sheets of the same paper, with three corrugations to the inch. "The corrugations constitute a parellel heat path through the air space, and the partition offers a thermal resistance in series with it," he explained.

Considering the parallel heat flow first, he showed that of a total cross-section, 1.5% is occupied by the paper with a conductivity of 1.2 and 98.5% by the air with a conductivity of 0.17. "The component conductivities are directly additive:

0.015x1.2 = 0.018
0.985x0.17 = 0.167

0.185 = combined conductivity of air and paper in air space."

"In the series heat path," Mr. Knight said, "the reciprocals of the conductivities must be added. The paper partition occupies 2.3 per cent of the length of the path, so that the resultant total conduction of the air, corrugations and partitions is K_C in the equation

$$\frac{1}{K_C} = \frac{0.977}{0.185} + \frac{0.023}{1.2} = 5.28 + .0192 = 5.3$$

from which

K_C = 0.189 B. t. u. per hr. per sq. ft. per ° F. per in."

"The total effective conductivity is then expressed as $K = K_R + K_C$ or K = 0.27

"A thickness of 3 in. was used in the above calculations for convenience. It should be noted that the same result will be obtained with any total thickness—provided the component air spaces are kept at 1/10 in," he explained.

Mr. Knight offered the following considerations in the selection of insulation for electric refrigerators: thermal efficiency, life, effects of moisture, factory application, and odor.

"Many methods of spacing and supporting the sheets have been tried experimentally, but the method I have just suggested has been found to be most satisfactory," he maintained. A spacing of about 1/10 in. for the flat sheets and about three corrugations to the inch for the separators, have given the best results, he reported.

"A hot plate conductivity factor of 0.27 B. t. u. per hour per sq. ft. per degree F. per in. has been obtained with this arrangement," he claims, "and this checks with the theoretical value."

In discussing the probable life of the insulant, Mr. Knight brought up the fact that books 20 years old whose pages are in perfect condition, are familiar to everyone. By using unbleached sulphate paper, the life should approach that of rag stock paper used in high quality books, he believes. Light, heat, and air are the elements that deteriorate paper, and these factors are minmized in a refrigerator cabinet, he pointed out.

A very effective method which the General Electric engineers have devised for protecting the insulant from the moisture, Mr. Knight reported, involves encasing the insulating sheets in a stout cardboard carton, made to size, and then dipping the whole in a bath of melted petrolatum wax.

"When properly sealed from the outside air, a cabinet insulated with this paper has been held in a high humidity atmosphere for months, with no ill effects," he stated.

"Adequate sealing completely eliminated the odor question," he said, "and the slabs of paper insulation can be handled, stored, and assembled in much the same manner as the usual slab or board forms of insulation," he concluded.

F. R. BACON NAMED PRESIDENT OF CUTLER-HAMMER AGAIN

MILWAUKEE — Frank R. Bacon, chairman of the board of directors of Cutler-Hammer, Inc., has been elected president of that company, succeeding Beverly L. Worden, who died recently at his home in West Orange, N. J., it has been announced. F. L. Pierce and J. C. Wilson were elected vice presidents.

SHORT ELECTRIC WAVES USED TO COMBAT DIPTHERIA

PITTSBURGH—Electricity has been found helpful in combatting diphtheria, according to W. T. Szymanowski and Robert Alan Hicks of the Western Pennsylvania Hospital for this city.

These men report that their research has disclosed the fact that diptheria germs are greatly diminished in strength when subjected to short electric waves, 1.9 and 3.76 meters, at respective frequencies of 158,000,000 and 80,000,000 cycles per second.

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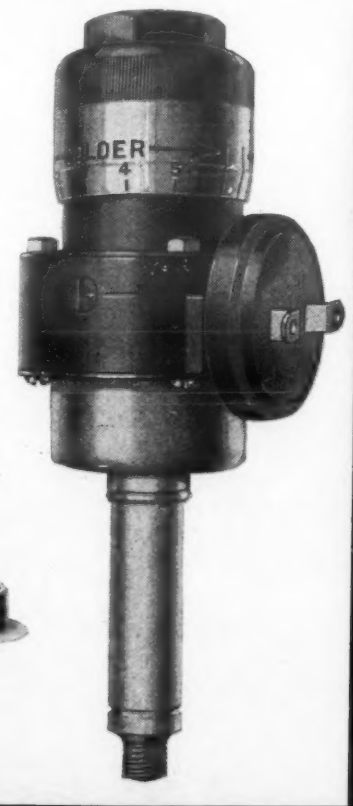

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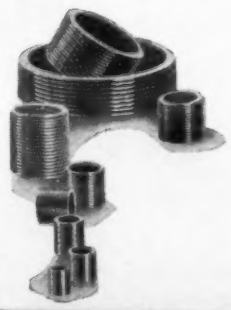

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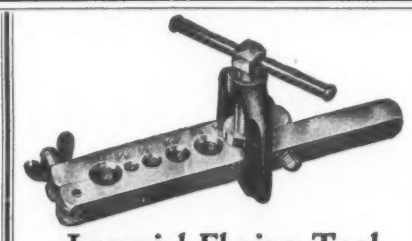

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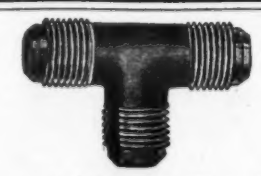

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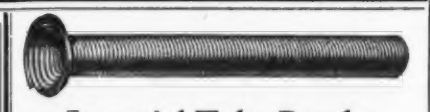

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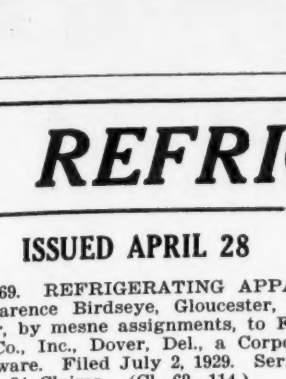
REFRIGERATION PATENTS

ISSUED APRIL 28

1,802,369. REFRIGERATING APPARATUS. Clarence Birdseye, Gloucester, Mass., assignor, by mesne assignments, to Frosted Foods Co., Inc., Dover, Del., a Corporation of Delaware. Filed July 2, 1929. Serial No. 375,418. 34 Claims. (Cl. 62—114.)

1. A refrigerating apparatus comprising a heat-conducive member having a face disposed in vertical position, means for supplying a refrigerating medium to said member to chill said face, and an oppositely disposed pressor member arranged to hold a product to be refrigerated in intimate contact with said vertical face.

1,802,396. LIQUID COOLER. Halsey W. Taylor, Warren, and James T. Smith, Cleveland, Ohio; said Smith assignor to the Halsey W. Taylor Co., Warren, Ahio, a Corporation of Ohio. Filed May 28, 1928. Serial No. 281,083. 18 Claims. (Cl. 62—141.)



1,802,396

1. In a refrigerating apparatus, a storage receptacle, a liquid circulating coil encircling said receptacle in delivery connection therewith, and automatic means for circulating a refrigerant at intermittent intervals in heat exchange relation with the liquid passing through said coil.

1,802,404. ICE-SCORING MACHINE. Richard S. Cowan, Fort Worth, Tex., assignor, by mesne assignment, to General Ice Scoring Machine Co., a Corporation of Delaware. Filed Dec. 13, 1928. Serial No. 325,729. 28 Claims. (Cl. 125—13.)

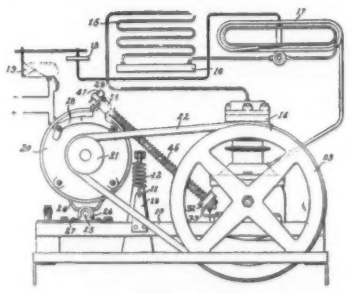
1,802,451. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 31, 1928. Serial No. 329,367. 9 Claims. (Cl. 308—11.)

4. In a refrigerating apparatus, a driving member, a driven member, one of said members being yieldingly pivoted upon a support, a band attached to said support and partly sunrrounding said pivoted member, said band contacting with the casing of said pivoted member and a spring attached to one end of said band.

1,802,465. VENTILATOR FOR ICE TANKS. Alexander H. Gaebler, Chicago, Ill., assignor, by mesne assignments, to Industrial Patents Corp., Chicago, Ill., a Corporation of Delaware. Filed April 26, 1929. Serial No. 358,254. 9 Claims. (Cl. 62—19.)

1. An ice tank for refrigerator cars having an air inlet opening at the top portion thereof and an air outlet opening at the top portion thereof, said outlet opening having an air deflecting hood thereover.

1802,485. REFRIGERATING APPARATUS. Harry F. Smith and Elmer L. Horlacher, Dayton, Ohio, assignors to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Nov. 30, 1928. Serial No. 322,669. 9 Claims. (Cl. 308—11.)



1,802,485

1. In combination, a driving member, a driven member, belt means connecting said members, said driving member being pieldingly supported and snubber means opposing movement of said driving member towards said driven member, said snubber means comprising a rod supported near said driving member and a snubber adapted to grip said rod upon movement of said driving member towards said driven member.

1,802,486. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed July 19, 1926.. Serial No. 123,420. 19 Claims. (Cl. 200—81.)

19. A switch comprising, in combination, relatively stationary and movable contacts, a quick break device for said contacts including a lever member associated with the movable contact, an actuating member associated with said lever member, means for bodily moving one of said members relative to the other, said actuating member having a dead center position with the lever member and tending to hold said lever member in contact-making position until said means has moved said members to the dead center position and tending to quickly move said lever member to actuate the movable contact after said means has moved the members beyond the dead center position, and means for maintaining said contacts in engagement while said members are in dead center position, said last means including a spring constantly urging the contacts toward one another.

1,802,513. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 29, 1928. Serial No. 329,284. 12 Claims. (Cl. 308—11.)

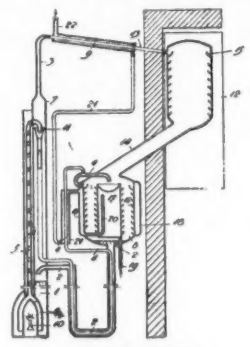
1. In a refrigerating apparatus, a driving member, a driven member, belt means operatively connecting said members, one of said members being yieldingly mounted, a brake surface attached to said last mentioned member, mounted member towards said other member and bearing against said brake surface and supporting means for said brake shoe urging said brake shoe against said brake surface.

1,802,516. METHOD OF AND APPARATUS FOR PRODUCING REFRIGERATION. Frederick G. Keyes, Cambridge, Mass., assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed March 22, 1927. Serial No. 177,238. 7 Claims. (Cl. 62—5.)

6. The method of producing refrigeration which consists in generating refrigerant to supply liquid refrigerant to an evaporating chamber and simultaneously absorbing gaseous refrigerant to produce evaporation in said chamber, and utilizing the level of the liquid in the evaporating chamber for controlling the generating of refrigerant.

1,802,537. REFRIGERATING APPARATUS OF THE ABSORPTION TYPE. Gunnar Roos, Stockholm, Sweden. Filed Jan. 2, 1929. Serial No. 329,874, and in Germany Jan. 3, 1928. 2 Claims. (Cl. 62—119.5.)

1. Refrigerating apparatus of the absorption type comprising a boiler containing absorption liquid and a rising pipe, collecting means positioned below the liquid level of said boiler connected to said rising pipe and adapted to collect only a portion of the gas expelled from said absorption liquid, a condenser and an evaporator receiving, liquefying and gasifying all of the gas in



1,802,537

said boiler, an absorber connected to said evaporator and positioned above the liquid level of said boiler, a pipe connected to said absorber and entering said boiler and a second pipe in said boiler receiving the weak absorption liquid from the first mentioned rising pipe and conducting the same to said absorber.

1,802,654. ELECTRIC HUMIDIFIER. Max Katzman, Utica, N. Y. Filed July 16, 1928. Serial No. 293,153. 7 Claims. (Cl. 219—38.)

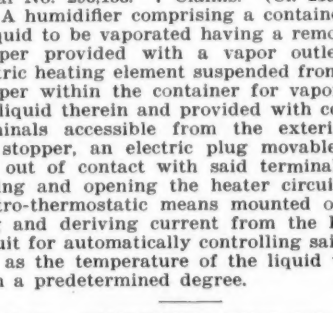
1. A humidifier comprising a container for a liquid to be vaporated having a removable stopper provided with a vapor outlet, an electric heating element suspended from said stopper within the container for vaporizing the liquid therein and provided with contact terminals accessible from the exterior of the stopper, an electric plug movable into and out of contact with said terminals for closing and opening the heater circuit and electro-thermostatic means mounted on the plug and deriving current from the heater circuit for automatically controlling said circuit as the temperature of the liquid varies from a predetermined degree.

1,802,659. CONDENSER UNIT FOR REFRIGERATING APPARATUS. Hubert R. Loranger, Highland Park, and Dallas D. Parshall, Detroit, Mich.; said Loranger assigner to Automatic Freezer Corp., Detroit, Mich., a Corporation of Michigan. Filed June 30, 1924. Serial No. 723,185. 2 Claims. (Cl. 62—116.)

1. In a refrigerating apparatus, the combination with a motor driven compressor, of a condenser unit detachably connected therewith comprising spaced stanchions, a cooling coil extending spirally about said stanchions, and a combined reservoir and purifier extending between said stanchions and connected with said coil.

1,802,813. SEAL CONSTRUCTION. Harold A. Greenwald, Detroit, Mich., assignor to Thomas C. Whitehead, Detroit, Mich. Filed Jan. 30, 1928. Serial No. 250,624. 5 Claims. (Cl. 230—202.)

1. In combination,a pump having a wall provided with a fluid passage and a shaft



1,802,813

opening, and provided about said opening with a laterally projecting tubular portion constituting a fluid chamber, said chamber being in open communication with said passage, a plate secured to the outer end of said chamber and having a shaft opening, a plate within said chamber and secured to said pump wall, a shaft in the openings aforesaid and provided intermediate its ends with an enlargement, means for conducting a fluid to said chamber, and means for preventing such fluid from flowing longitudinally of the shaft through the opening in the first mentioned plate, including bellows surrounding the shaft between said enlargement and plates aforesaid.

1,802,988. COOLING UNIT FOR REFRIGERATORS. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y., a Corporation of New York. Filed Nov. 8, 1928. Serial No. 317,936. 5 Claims. (Cl. 62—95.)

3. A cooling unit including a vaporizing chamber, a cooling chamber, and a plurality of cooling tubes each having an intermediate part which has a flat inner side contacting with the wall of said cooling chamber and a convex outer side, a rounded upper end opening into said vaporizing chamber and forming a shoulder engaging with the upper side of said cooling chamber, and a rounded lower end forming a shoulder engaging with the under side of said cooling chamber.

1,803,036. REDISTRIBUTION SYSTEM FOR COOLING TOWERS. John F. Pritchard, Kansas City, Mo. Filed Aug. 25, 1927. Serial No. 215,420. 4 Claims. (Cl. 261—113.)

1. In a cooling tower including spaced decks in its upper portion and a coil in its lower portion, a trough extended through the tower between the coil and decks for collecting cooled liquid the lower deck, a pipe extended over the coil beneath the trough connected with the trough to receive liquid therefrom and having spaced ports for distributing said liquid, and a pan beneath the pipe covering the coil and having a multiplicity of aperatures in its bottom for spreading liquid received from the pipe over the coils.

1,803,074. REFRIGERATING APPARATUS. Albert C. Schickler, Cleveland, Ohio, assignor to Edmund E. Allyne, Cleveland, Ohio. Filed June 14, 1929. Serial No. 370,988. 3 Claims. (Cl. 62—118.)

1,803,074

1. In an absorption refrigerating apparatus, a generator, condenser and evaporator connected in an operative cycle, and an expansion device in said connections between the condenser and the evaporator and comprising an elongated casing sealed in the circuit, an elongated tube within said casing sealed at both ends to the circuit and provided with a minute opening extending through the same and of substantially uniform bore throughout.

1,803,139. GAS PRODUCER. Harry F. Smith, Dayton, Ohio, assignor to The Gas Research Co., Dayton, Ohio, a Corporation of Ohio. Filed June 26, 1922. Serial No. 570,972. 11 Claims. (Cl. 48—63.)

2. A gas producer comprising a gas generating chamber adapted to contain a fuel bed; a base member closing the lower end of said generating chamber and adapted to support the fuel bed therein; means for introducing a blast of air and moisture into the fuel bed within said generating chamber to cause the generation of combustible gas; and a layer or heat insulation permanently maintained upon said base during operation, consisting of finely divided unburned carbonaceous material of the character serving to constitute the fuel bed for the generation of gas but more finely divided than the bulk of the material of the fuel bed, said layer of heat insulating material serving to cut down the transfer of heat from the active zone of the fuel bed into the base member.

1,803,146. BOTTLE-VENDING MACHINE. Henry Frank Robbins, Cottage Groove, Tenn. Filed June 20, 1929. Serial No. 372,466. 5 Claims. (Cl. 194—80.)

1. In a bottle-vending machine the combination of a cabinet, a gravity feed bottle receiving passageway having an open lower end, a guideway extending beneath the open lower end for singly receiving the bottle, an ejector block reciprocally mounted in the guideway and having its inner end normally closing the lower open end of the passageway when the block is in its inward position, a manually operable slide plate relatively movable in the ejector block, and coin control means including a coin guide for directing a coin into a releasable position keying the ejector block for movement by the slide plate.

1,803,212. REFRIGERATING PROCESS AND APPARATUS FOR COOLING FAT EMULSIONS SUCH AS MARGARINE AND THE LIKE. Wilhelm Gotthilf Schroeder, Lubeck, Germany. Filed Aug. 19, 1929. Serial No. 386,870, and in Germany Feb. 4, 1926. 4 Claims. (Cl. 62—114.)

1. An apparatus for cooling fat emulsions and the like, comprising a revolving cooling drum, means for applying to the said cooling drum the material to be cooled, and a cooling device, directly connected with a refrigerating machine, arranged within the interior of said drum, the evaporator of a refrigerating machine being constructed within the hollow space of the drum, said evaporator consisting of a hollow vessel having two headers extending substantially the entire length within the hollow vessel connected with one another by several semicircular tubes, within which vaporize the cooling agents which are supplied and withdrawn through tubes led through the hollow shafts of the revolving drum, as set forth.

DESIGNS

84,025. REFRIGERATOR CABINET. Frank C. Burton, Evanston, Ill., assignor to Majestic Household Utilities Corp., Chicago, Ill., a Corporation of Illinois. Filed Feb. 6, 1931. Serial No. 38,568. Term of patent, 14 years.

FERNALD TO REPRESENT I.T.L. IN PENNSYLVANIA

CHICAGO—The Illinois Testing Laboratories recently appointed F. W.Fernald as representative in western Pennsylvania and West Virginia.

REFRIGERATION IS AID TO BAKERIES--ARCHER

KANSAS CITY, Mo.—The use of refrigeration to maintain correct room temperatures, cool water to the proper point, and keep the air conditioned to the right temperatures and humidities, has been an important aid to the progress made by bakery engineers within the past few years, A. W. Archer, local architect, told the engineers at the Wednesday morning session of the A. S. R. E.

Bakery information is becoming more comprehensive, he said, largely because the large chain bakeries are extending their operation over the whole country, and discovering that climatic and water conditions in one region are much different in other places.

Bread making operations may use additional refrigeration applications in the future, Mr. Archer believes, especially where temperatures of water approximate 85° F. and the atmosphere is around 92° F. with low humidities. If all materials can be stored or held at the proper temperature and condition before the various ingredients are scaled into doughs, he stated, it naturally follows that a better bread will result.

"There has probably been more trouble with refrigeration plants in bakeries caused by improper and illogical installations of the various parts of the equipment than in perhaps any other phase of this work," Mr. Archer claimed.

"It should be remembered that a bakery is a place designed to bake bread, and not a machine shop," he said. "The plant engineer is usually an individual who is inclined to tinker, so all equipment should be as automatic as it is economical to make it, and at the same time built so that repairs can be made easily."

"The provision of water at the right temperature is one of the most important phases of bakery refrigeration," he stated. "The amount of water per dough is definitely known to each baker, and the quatity needed for the present and future requirements of a bakery can be readily determined. It should go to the scales at temperatures around 35 to 40° F.

His plea for the architects was that engineers provide safe, automatically operated equipment, insuring a saving in labor and positive results. The requirements for refrigerating equipment in bakeries, he recounted in conclusion, are simplicity in design, accuracy in operation, sanitation, and durability.

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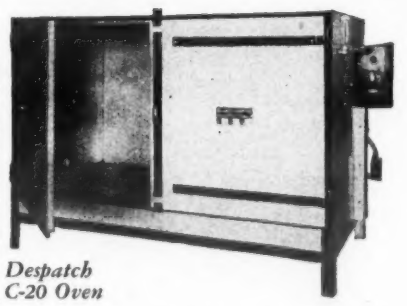
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